CA Series PC/104 Multiport Serial Module

User's Manual

www.moxa.com/product

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1 Introduction

Welcome to the CA Series of PC/104 communication modules, a multiport serial module for industrial applications. It is designed for PC/104 CPU boards that accept the PC/104 expansion interface. Optional DB9 and DB25 cables are available to connect different devices. The device drivers make full use of the 64-byte Tx/Rx FIFO and on-chip flow control, which allows up to 921.6 Kbps data transmission.

The CA Series includes the following models:

CA-108: 8 ports, RS-232
CA-108-T: 8 ports, RS-232, wide temperature
CA-114: 4 ports, RS-232/422/485
CA-114-T: 4 ports, RS-232/422/485, wide temperature
CA-134I: 4 ports, RS-422/485, optical isolation protection
CA-134I-T: 4 ports, RS-422/485, optical isolation protection, wide temperature
CA-104 V2: 4 ports, RS-232
CA-104-T V2: 4 ports, RS-232, wide temperature
CA-132 V2: 2 ports, RS-422/485
CA-132-T V2: 2 ports, RS-422/485, wide temperature
CA-132I V2: 2 ports, RS-422/485, optical isolation protection
CA-132I-T V2: 2 ports, RS-422/485, optical isolation protection, wide temperature

2 KV optical isolation is provided on optical isolation models. Wide temperature models are rated for operation between -40 to 85°C.

The following topics are covered in this chapter:

- **Overview**
- **Package Checklist**
- **Product Features**
- **Product Specifications**

Overview

The CA Series PC/104 module is designed to be used with PC/104 CPU modules or CPU cards with the PC/104 expansion interface. Models are available for RS-232, RS-422, and RS-485, with 2, 4, or 8 ports. The serial ports are accessed through a 20 or 40-pin box header connector on the module. DIP switches allow you to configure the I/O base address and INT vector of each port. The industry-standard MOXA UART (16C550 compatible) is fully programmable. Built-in 15 KV ESD protection protects devices connected to the serial network.

Package Checklist

MOXA performs a careful mechanical and electrical inspection of each module prior to shipping. Your module should arrive in perfect electrical order, free of any marks or scratches. Please handle the module by the edges only, since your body's static charge can damage the integrated circuits. When the module is not in use, please keep it in the anti-static package provided. You may also use this package to return the module if it requires repair.

The CA Series module is shipped with the following items:

- CA Series PC/104 multiport serial module
- Documentation and Software CD
- Quick Installation Guide
- 5-year product warranty statement

Note: Please notify your sales representative if any of the above items are missing or damaged.

Product Features

The CA Series module features the following:

- 2, 4, or 8 serial ports (depending on model)
- RS-232, RS-422, or RS-485 operation (depending on model)
- 64-byte FIFOs and on-chip flow control
- Up to 921.6Kbps data transmission speed
- Built-in 15 KV ESD protection
- Configurable IRQ and I/O settings
- Onboard Tx, Rx LED indicators for each port
- Optional wide temperature support (-40 to 85°C)

Product Specifications

CA Series PC/104 Multiport Serial Module

Hardware

I/O controller	16C550C or compatible
Connector Type	40-pin box header (CA-108, CA-114, CA-134I, CA-104 V2) 20-pin box header (CA-132 V2, CA-132I V2)

Interface

Bus	PC/104 bus (Ver. 2.4)
No. of Ports	2 ports (CA-132 V2, CA-132I V2) 4 ports (CA-114, CA-134I, CA-104 V2) 8 ports (CA-108)
Max. No. of Modules	4

Signals

RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422	TxD+(B), TxD-(A), RxD+(B), RxD-(A), GND
4-wire RS-485	TxD+(B), TxD-(A), RxD+(B), RxD-(A), GND
2-wire RS-485	Data+(B), Data-(A), GND

Performance

Baudrate	50 bps to 921.6 Kbps

Configuration

Parity	None, Even, Odd, Space, Mark
Data Bits	5, 6, 7, 8
Stop Bit(s)	1, 1.5, 2
IRQ	Shared IRQ for all ports (includes IRQ 3, 4, 5, 6, 7, 9, 10, 11, 12, 15)
FIFO	64 bytes
Additional Settings	I/O base address, interrupt vector, serial interface (all by DIP switch)
Driver Support	DOS Windows 2000, XP, 2003, Vista Linux 2.4, Linux 2.6

Power and Environment

Operating Temperature	Standard models: 0 to 55°C (32 to 131°F) "-T" models:, -40 to 85°C (-40 to 185°F)
Operating Humidity	5 to 95% RH
Storage Temperature	-40 to 70°C (-40 to 158°F)
ESD Protection	Embedded 15 KV ESD protection

Other

Dimensions (W x D)	96 x 90 mm
Regulatory Approvals	EN55022 Class A, EN55024, EN6100-3-2, EN61000-3-3, FCC Part 15 Class A
Warranty	5 years

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Hardware Installation

This chapter explains how to install the CA Series PC/104 multiport serial module.

The following topics are covered:

- **Hardware Installation**
- **Block Diagrams**
  - I/O Base Address
  - Interrupt Vector
  - Serial Interface
  - IRQ

Hardware Installation

Installing the CA Series module is easy. Before inserting the module into the PC/104 slot, you must first configure the I/O base address, interrupt vector, IRQ, and serial interface (for select models).

ATTENTION

Safety First!
To prevent damage to your system or board, make sure your embedded PC's power is turned off before installing your CA Series module.

Step 1: Shut off power to your embedded PC and to any peripheral devices. After shutting off power, remove the cover of your embedded PC.

Step 2: Use the DIP switches on the module to select I/O base address, interrupt vector, IRQ, and serial interface (for select models). Details for each model are provided later in this chapter.

Step 3: Insert the module firmly into the embedded PC's PC/104 slot.

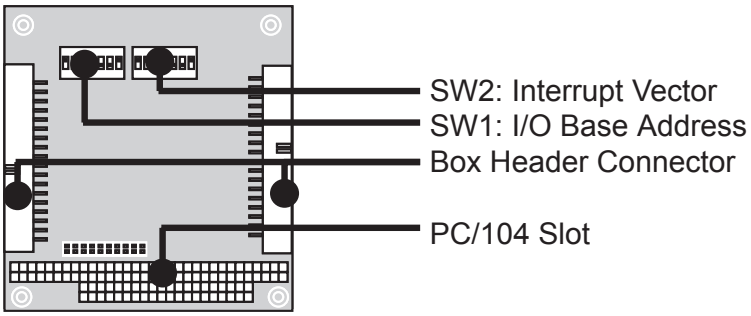
Step 4: Screw the control board in place.

Step 5: Connect the cables.

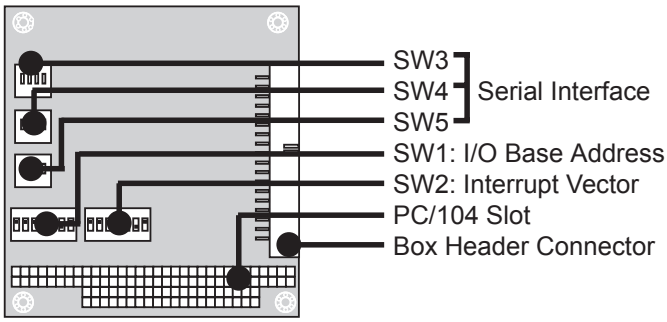
Step 6: Power on the embedded PC.

Block Diagrams

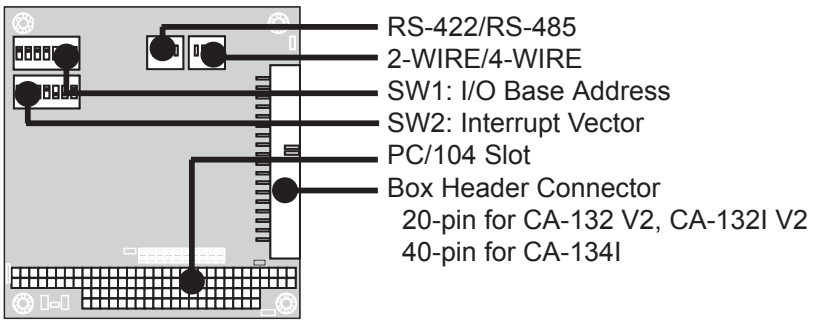
CA-108



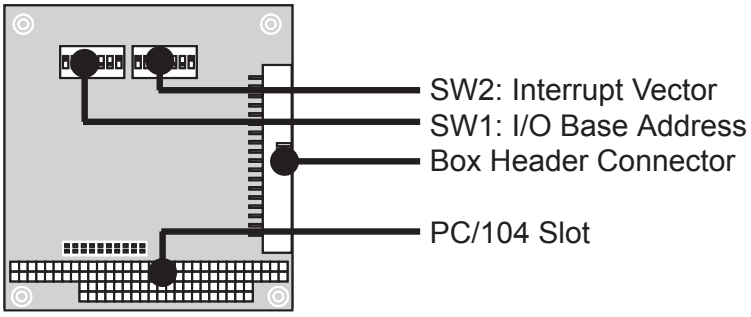
CA-114



CA-134I, CA-132 V2, CA-132I V2



CA-104 V2



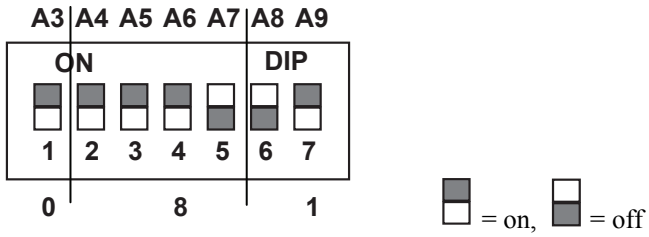
I/O Base Address

Use DIP switch SW1 to set port 1's I/O base address. The other ports will be configured automatically. The default I/O base address is 0×180 and allows settings from 0×000 to 0×3FF. Some popular settings are provided below:

A3	A4	A5	A6	A7	A8	A9	
8	1	2	4	8	1	2	Hex
ON	ON	ON	ON	ON	ON	ON	0×000
ON	ON	ON	ON	ON	ON	off	0×200
ON	ON	ON	ON	ON	off	off	0×300
ON	ON	ON	ON	off	off	off	0×380
ON	ON	ON	off	off	off	off	0×3C0
ON	ON	off	off	off	off	off	0×3E0
ON	off	off	off	off	off	off	0×3F0
off	off	off	off	off	off	off	0×3F8
off	ON	ON	ON	ON	ON	ON	0×008
off	off	ON	ON	ON	ON	ON	0×018
off	off	off	ON	ON	ON	ON	0×038
off	off	off	off	ON	ON	ON	0×078
off	off	off	off	off	ON	ON	0×0F8
off	off	off	off	off	off	ON	0×2F8

For example, an I/O base address of 0×180 should be set as follows:

A3	A4	A5	A6	A7	A8	A9	Hex
ON	ON	ON	ON	off	off	ON	0×180

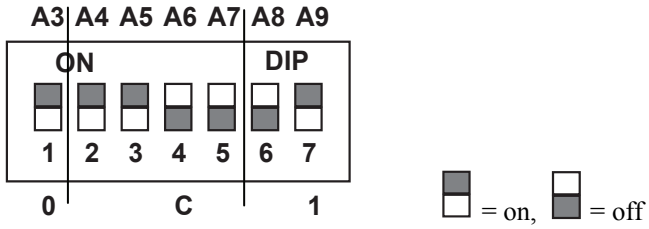


The other serial ports will be set automatically to 0×188, 0×190, 0×198, etc.

Interrupt Vector

Use DIP switch SW2 to set port 1's interrupt vector. The default interrupt vector is 0×1C0, with SW2 set as follows:

A3	A4	A5	A6	A7	A8	A9	Hex
ON	ON	ON	off	off	off	ON	0×1C0



Serial Interface

For the CA-114, use S3, S4, and S5 to select the serial interface as follows:

Mode	S3	S4	S5
RS-232	---	---	ON
RS-422	---	ON	off
4-wire RS-485	ON	off	off
2-wire RS-485	off	off	off

For the CA-134I, CA-132 V2, and CA-132I V2, use the 2-WIRE/4-WIRE and RS-422/RS-485 DIP switches to select the serial interface as follows:

Interface	2-WIRE/4-WIRE	RS422/RS485
RS-422	---	OFF
4-wire RS-485	OFF	ON
2-wire RS-485	ON	ON

IRQ

Before selecting an IRQ, please enter the PC's BIOS and reserve a dedicated IRQ for the module. On the module, the IRQ is set by a jumper. Before inserting the module into the PC/104 slot, use the jumper to select an IRQ (3, 4, 5, 6, 7, 9, 10, 11, 12, or 15).

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Software Installation

After installing the CA Series module in your embedded computer, the next step is installing the software. Drivers for various operating systems are provided, including DOS, Windows, and Linux. This chapter explains how to install and remove the CA Series driver.

The following topics are covered in this chapter:

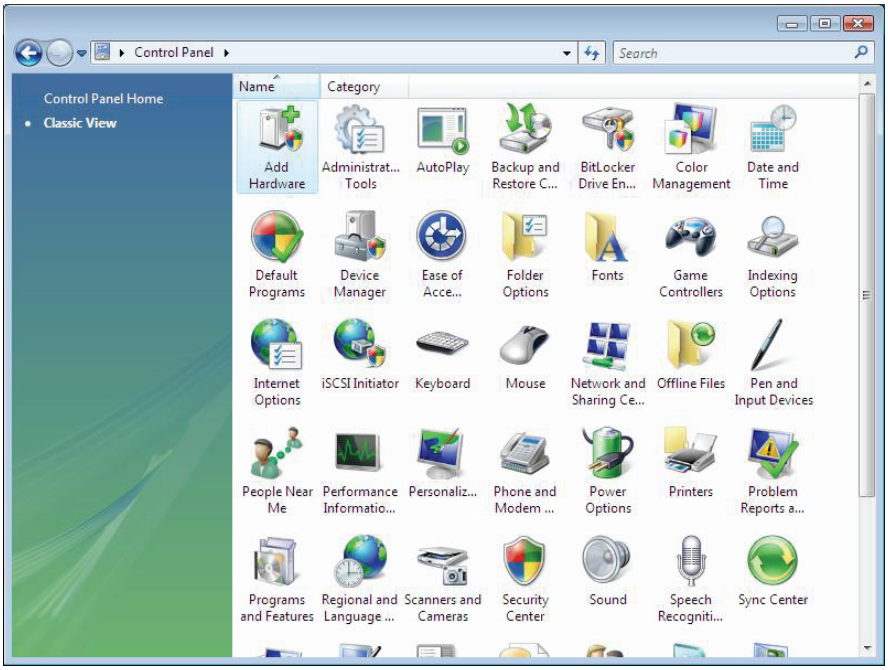
- **Windows Vista (32-bit)**
  - Installing the Driver
  - Using Device Manager to Verify Installation
  - Port Configuration
- **Windows XP, 2003 (32-bit)**
  - Installing the Driver
  - Using Device Manager to Verify Installation
  - Port Configuration
  - Using PComm
  - Using Event Log
  - Disabling the Module
  - Uninstalling the Module
- **Windows 2000**
  - Installing the Driver
  - Using Device Manager to Verify Installation
  - Port Configuration
  - Using PComm
  - Using Event Log
  - Disabling the Module
  - Uninstalling the Module
- **Windows NT**
  - Installing the Driver
  - Uninstalling the Module
- **Windows 95, 98, Me**
  - Installing the Driver
  - Uninstalling the Module
- **Linux**
- **DOS**
  - Installing the Driver
  - Driver Setup
  - Loading the Driver
  - Unloading the Driver

Windows Vista (32-bit)

The Windows Vista (32-bit) drivers conform to the Win32 COMM API standard and support all models in the CA Series. In the following instructions, the CA-114 is used as an example.

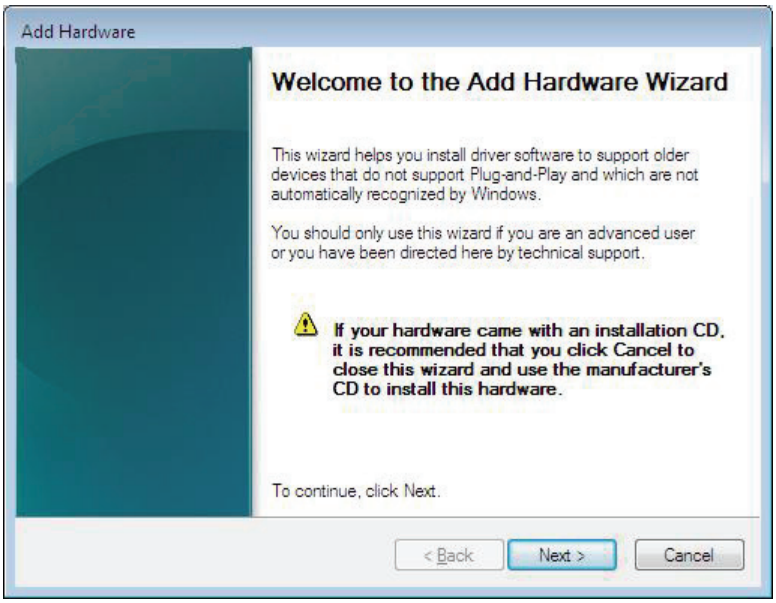
Installing the Driver

1. After turning the embedded computer on, log into Windows as Administrator.
2. Insert the Document and Software CD in your PC's CD-ROM drive.
3. Select **Add Hardware** from **Control Panel/Classic View**.

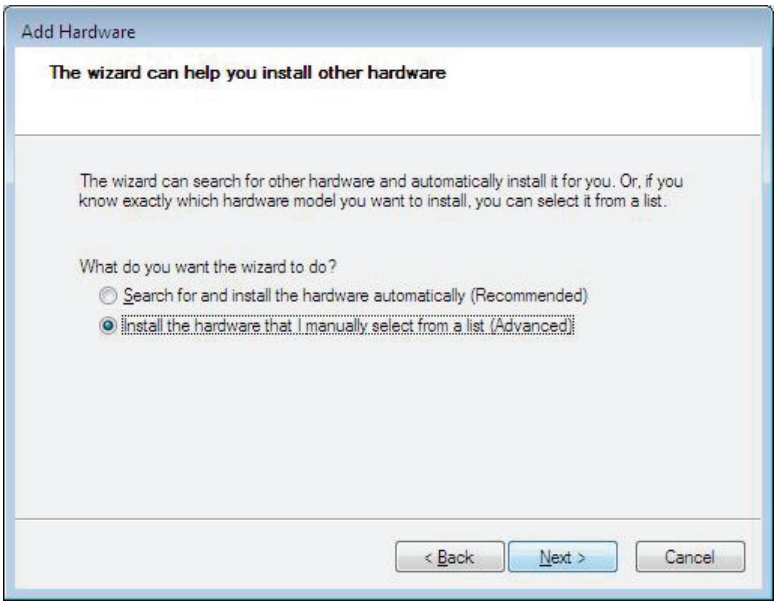


4. A window will appear stating that Windows needs your permission to continue. Click **Continue**.

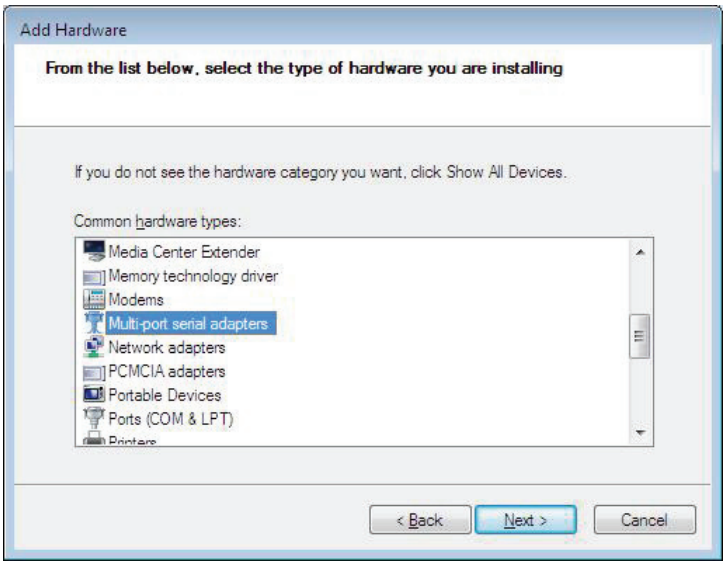
5. The Add Hardware Wizard will open. Click **Next** to continue.


Add Hardware
Welcome to the Add Hardware Wizard
This wizard helps you install driver software to support older devices that do not support Plug-and-Play and which are not automatically recognized by Windows.
You should only use this wizard if you are an advanced user or you have been directed here by technical support.
If your hardware came with an installation CD, it is recommended that you click Cancel to close this wizard and use the manufacturer's CD to install this hardware.
To continue, click Next.
< Back
Next >
Cancel

6. Select **Install the hardware that I manually select from a list (Advanced)** and click **Next** to continue.


Add Hardware
The wizard can help you install other hardware
The wizard can search for other hardware and automatically install it for you. Or, if you know exactly which hardware model you want to install, you can select it from a list.
What do you want the wizard to do?
Search for and install the hardware automatically (Recommended)
Install the hardware that I manually select from a list (Advanced)
< Back
Next >
Cancel

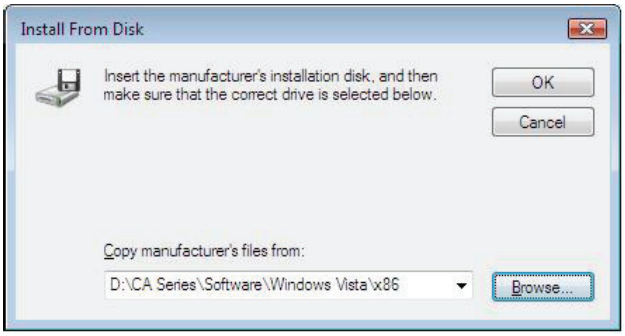
7. Select **Multi-port serial adapters** and click **Next** to continue.


Add Hardware
From the list below, select the type of hardware you are installing
If you do not see the hardware category you want, click Show All Devices.
Common hardware types:
Media Center Extender
Memory technology driver
Modems
Multi-port serial adapters
Network adapters
PCMCIA adapters
Portable Devices
Ports (COM & LPT)
< Back
Next >
Cancel

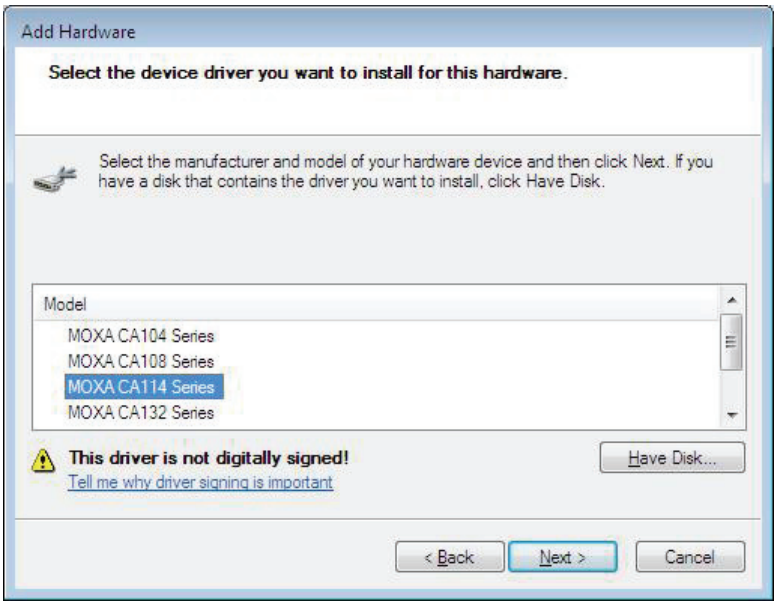
8. Click **Have Disk**.

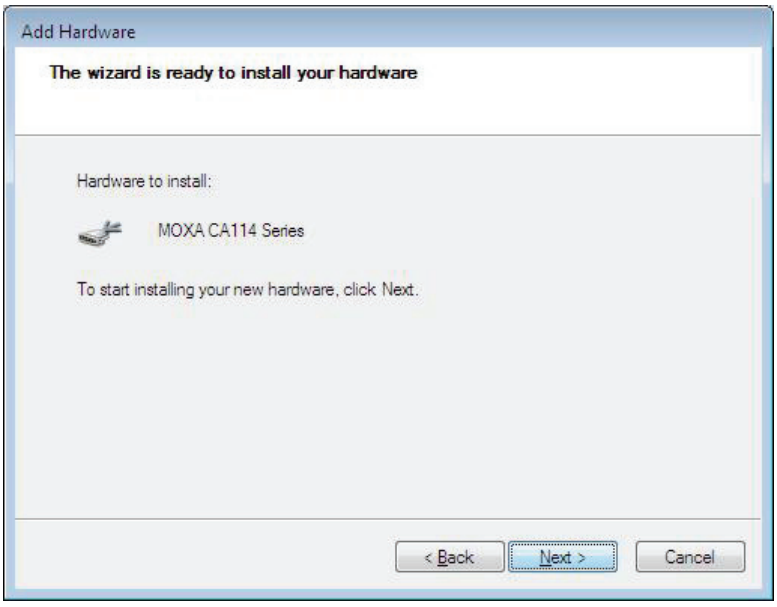
Add Hardware
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
(Unable to find any drivers for this device)
Have Disk...
< Back
Next >
Cancel

9. For 32-bit (x86) platforms, select the **\CA Series\Software\Windows Vista\x86** folder on the CD and click **OK** to continue.

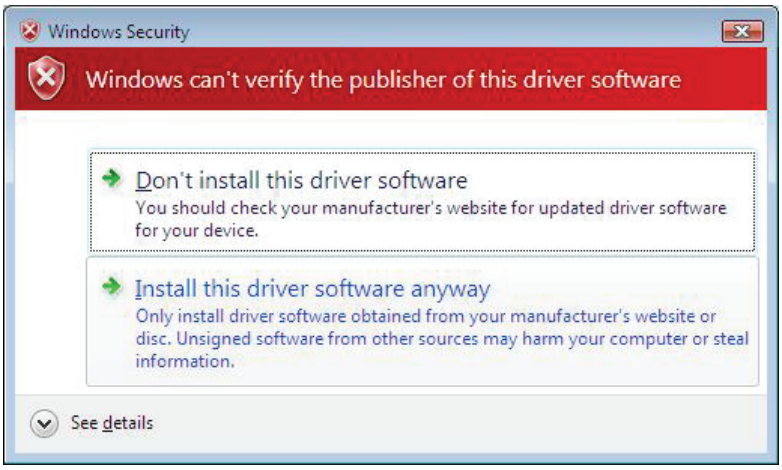

Install From Disk
Insert the manufacturer's installation disk, and then make sure that the correct drive is selected below.
OK
Cancel
Copy manufacturer's files from:
D:\CA Series\Software\Windows Vista\x86
Browse...

10. Select your CA Series model and click **Next** to continue.

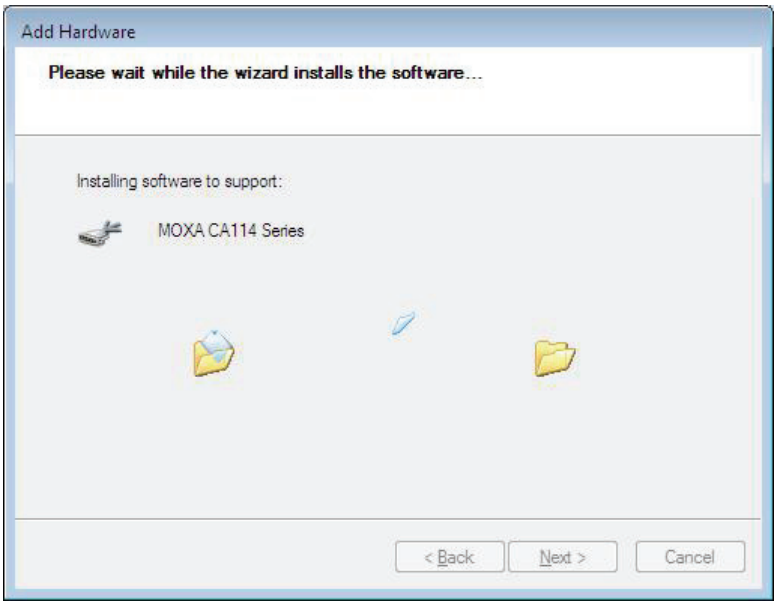

Add Hardware
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Model
MOXA CA104 Series
MOXA CA108 Series
MOXA CA114 Series
MOXA CA132 Series
This driver is not digitally signed!
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel


Add Hardware
The wizard is ready to install your hardware
Hardware to install:
MOXA CA114 Series
To start installing your new hardware, click Next.
< Back
Next >
Cancel

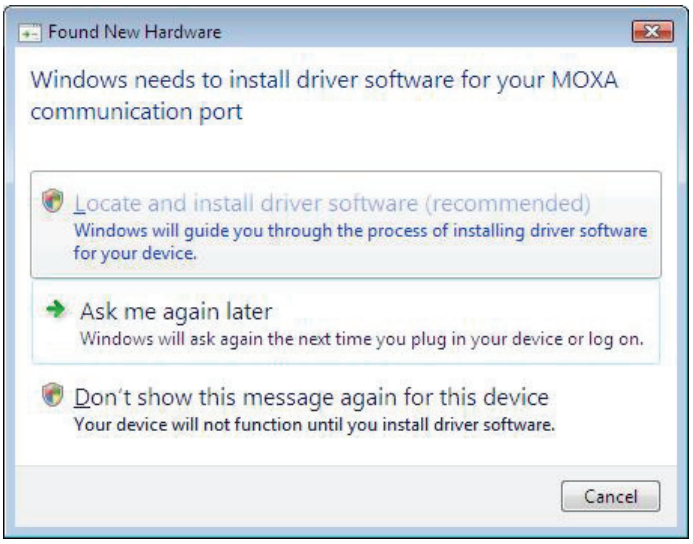
11. If you see a warning that the software has not passed Windows Logo testing, click **Install this driver software anyway**.


Windows Security
Windows can't verify the publisher of this driver software
Don't install this driver software
You should check your manufacturer's website for updated driver software for your device.
Install this driver software anyway
Only install driver software obtained from your manufacturer's website or disc. Unsigned software from other sources may harm your computer or steal information.
See details

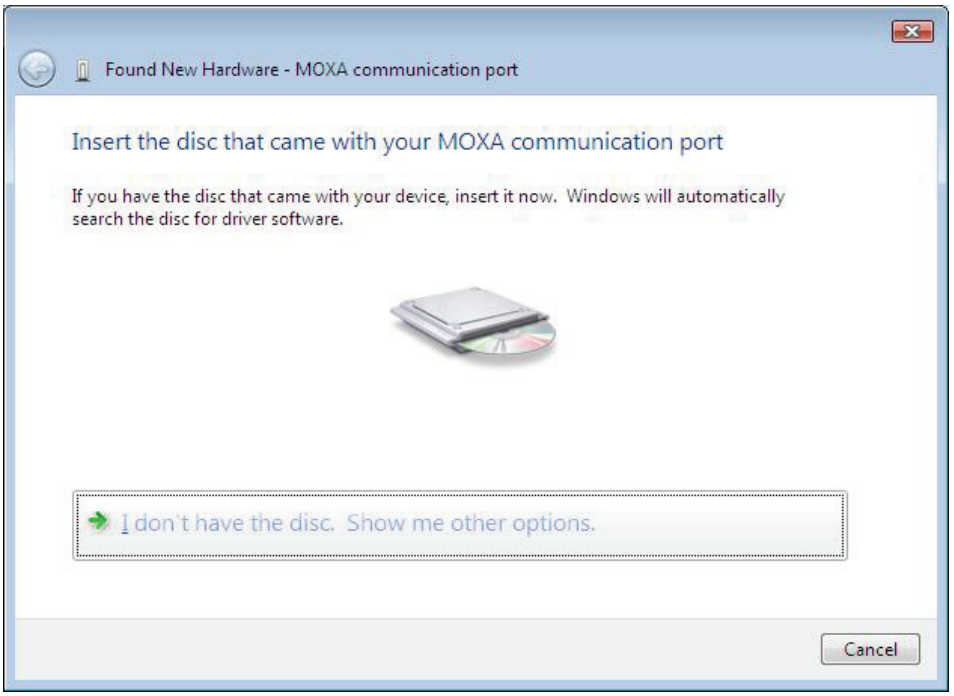
12. After the files have been installed, click **Finish**.



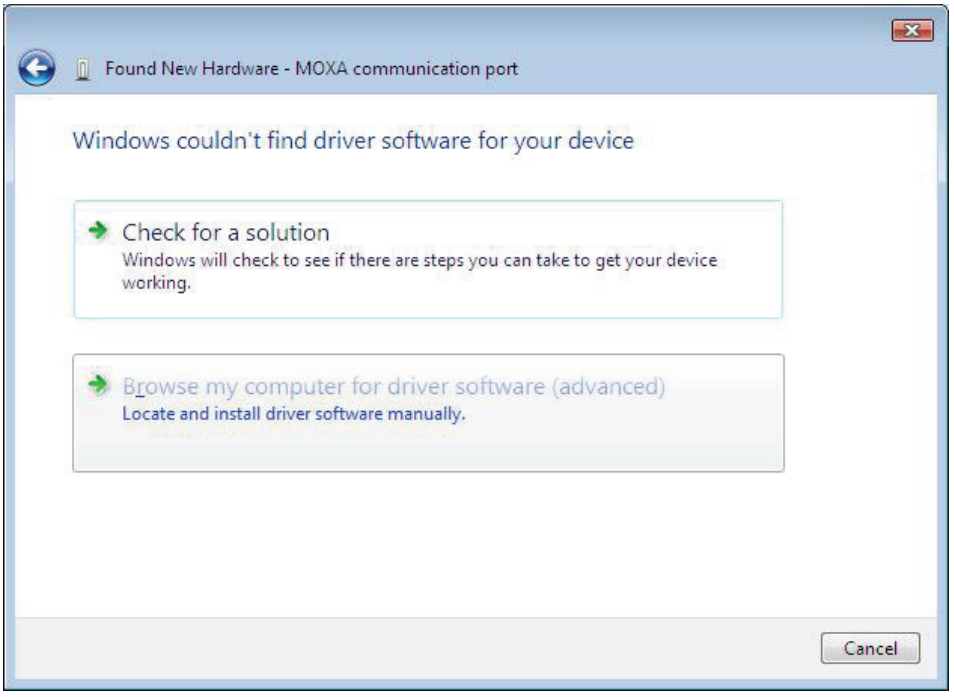
13. After the module is installed, you will be prompted to install the new serial ports. A **Found New Hardware Wizard** window will open for the first serial port, port 0. Select **Locate and install driver software (recommended)** to continue.


Found New Hardware
Windows needs to install driver software for your MOXA communication port
Locate and install driver software (recommended)
Windows will guide you through the process of installing driver software for your device.
Ask me again later
Windows will ask again the next time you plug in your device or log on.
Don't show this message again for this device
Your device will not function until you install driver software.
Cancel

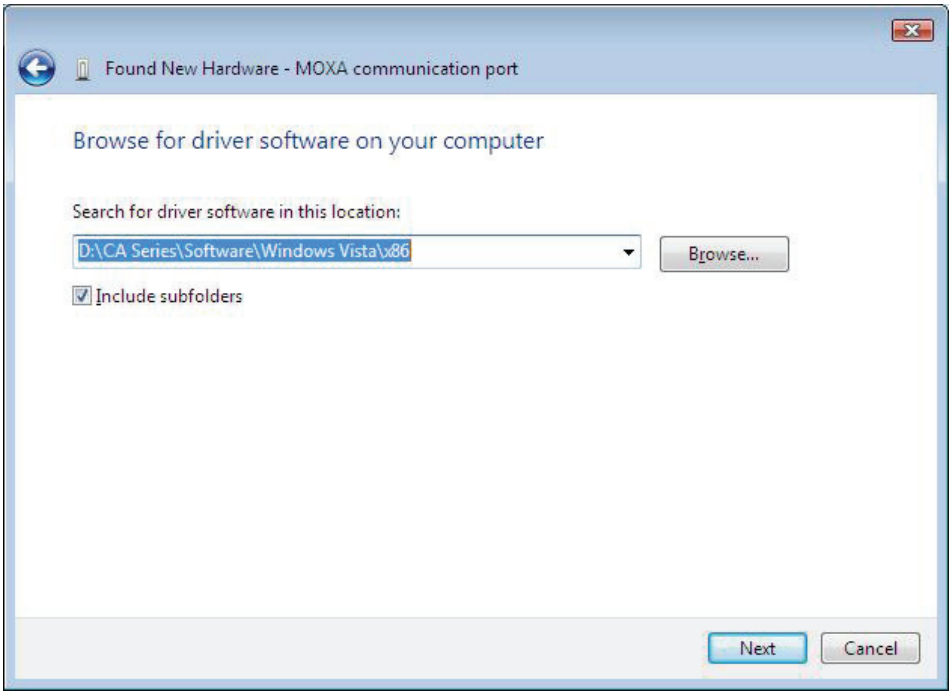
14. Select **I don't have the disc. Show me other options**.


Found New Hardware - MOXA communication port
Insert the disc that came with your MOXA communication port
If you have the disc that came with your device, insert it now. Windows will automatically search the disc for driver software.
I don't have the disc. Show me other options.
Cancel

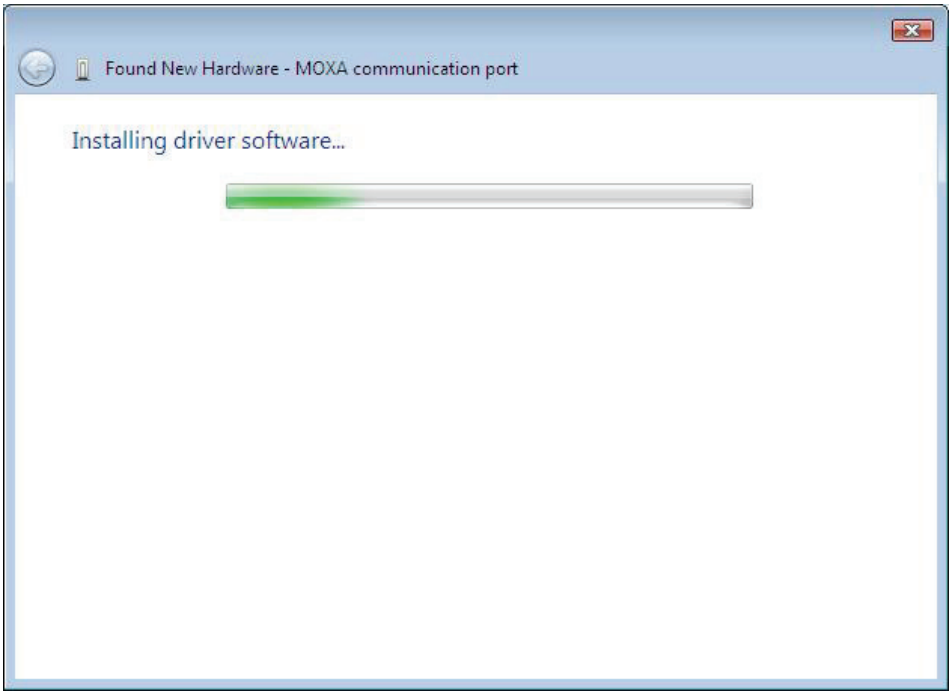
15. Select **Browse my computer for driver software (advanced)**.


Found New Hardware - MOXA communication port
Windows couldn't find driver software for your device
Check for a solution
Windows will check to see if there are steps you can take to get your device working.
Browse my computer for driver software (advanced)
Locate and install driver software manually.
Cancel

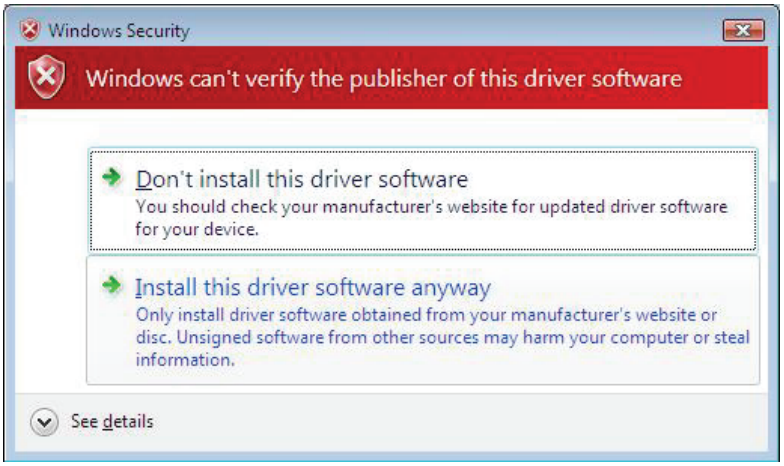
16. For 32-bit (x86) platforms, select the **\CA Series\Software\Windows Vista\x86** folder on the CD and click **OK** to continue.



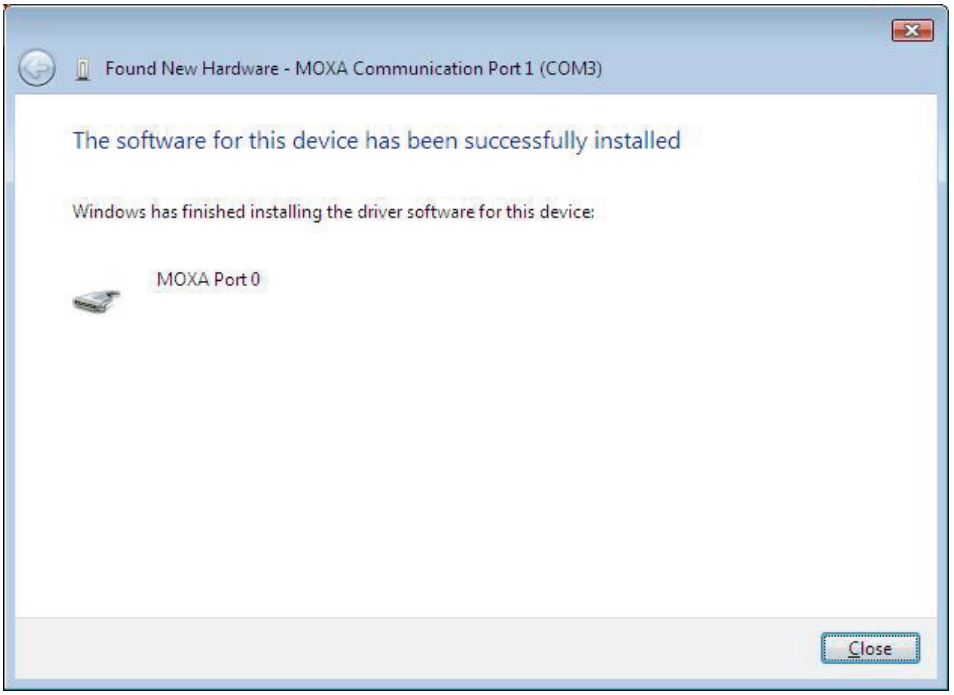
17. Windows will install the driver software.



18. If you see a warning that the software has not passed Windows Logo testing, click **Install this driver software anyway**.


Windows Security
Windows can't verify the publisher of this driver software
Don't install this driver software
You should check your manufacturer's website for updated driver software for your device.
Install this driver software anyway
Only install driver software obtained from your manufacturer's website or disc. Unsigned software from other sources may harm your computer or steal information.
See details

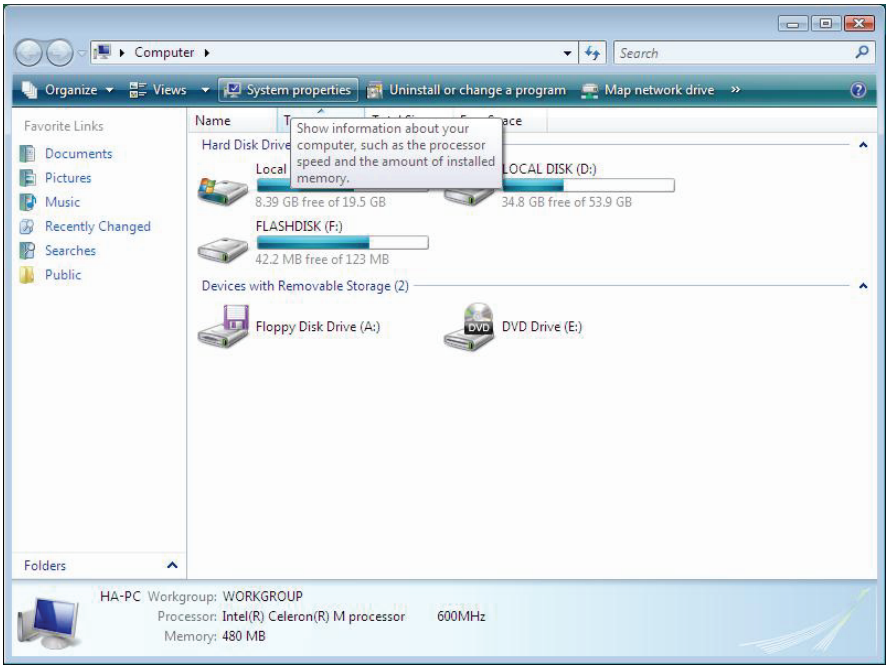
19. After the files have been installed, click **Close**. The remaining serial ports will automatically install in the background.


Found New Hardware - MOXA Communication Port 1 (COM3)
The software for this device has been successfully installed
Windows has finished installing the driver software for this device:
MOXA Port 0
Close

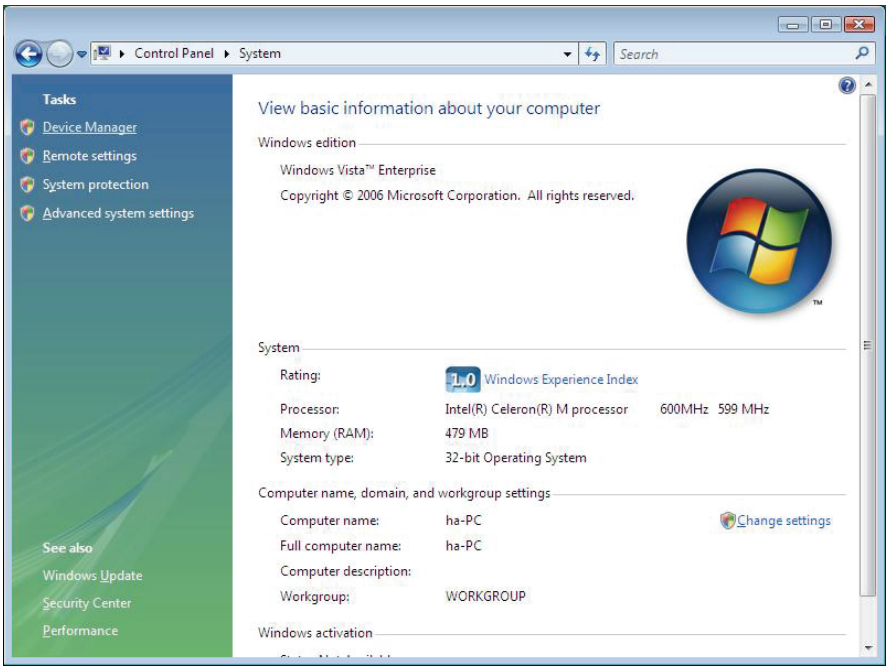
Using Device Manager to Verify Installation

You can use Windows Device Manager to verify proper installation of the CA Series module. In the following instructions, the CA-114 is used as an example.

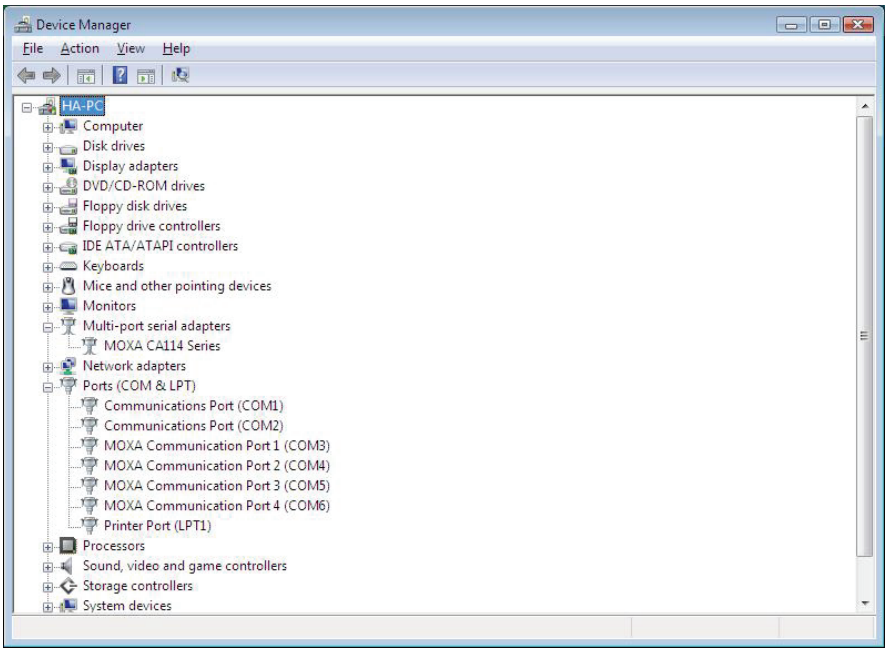
1. Under **My Computer**, click **System Properties**.



2. In the **System** window, click **Device Manager**.



3. In the **Device Manager** window, you should see your CA Series module under M**ulti-port serial adapters**. You should also see MOXA communication ports under **Ports (COM & LPT)**.

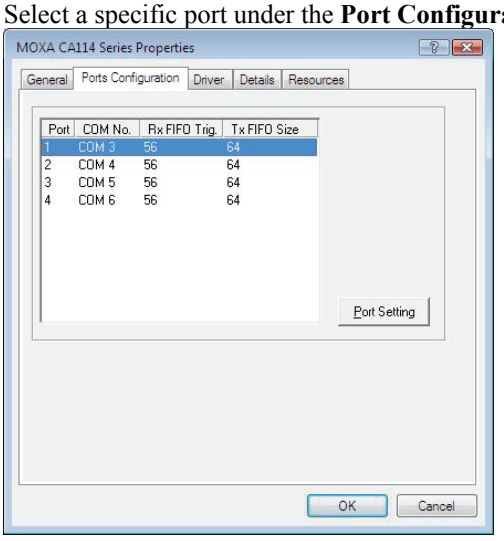


4. If you see any special marks, such as a question mark or an exclamation mark, next to the MOXA items, the installation of your module or serial ports was not successful. Examine the Windows event log for details.

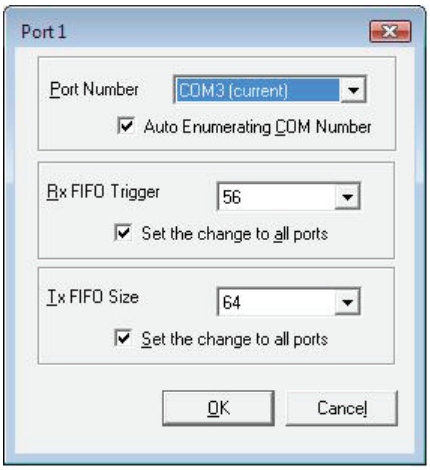
Port Configuration

After the driver is installed, a CA Series Properties window will appear. The system will map the serial ports automatically. It will prompt you to take care of port configuration if another CA Series module has been installed on the PC.

1. Select a specific port under the **Port Configuration** tab and click **Port Setting.**



2. Under **Port Number**, select a COM number to assign to the serial port.



   Select **Auto Enumerating COM Number** to map subsequent ports in numerical order. For example, if COM 3 is assigned to Port 1, then COM 4 will be automatically assigned to Port 2.

3. Select an **Rx FIFO Trigger.** The default value is 56 bytes (high level). Select **Set the change to all ports** to use this setting for all serial ports on the module.
4. Select a **Tx FIFO Size**. The default value is 64 bytes (high level). Select **Set the change to all ports** to use this setting for all serial ports on the module.
5. Click **OK** to approve the port settings. Click **OK** again to close the **CA Series Properties** window and apply the new port settings.

Windows XP, 2003 (32-bit)

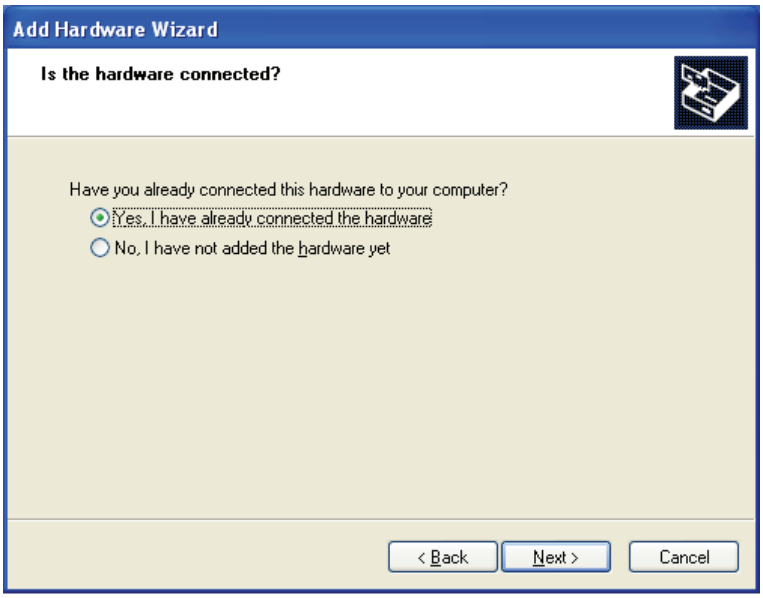
The Windows XP and 2003 (32-bit) drivers conform to the Win32 COMM API standard and support all models in the CA Series. In the following instructions, the CA-114 is used as an example.

Installing the Driver

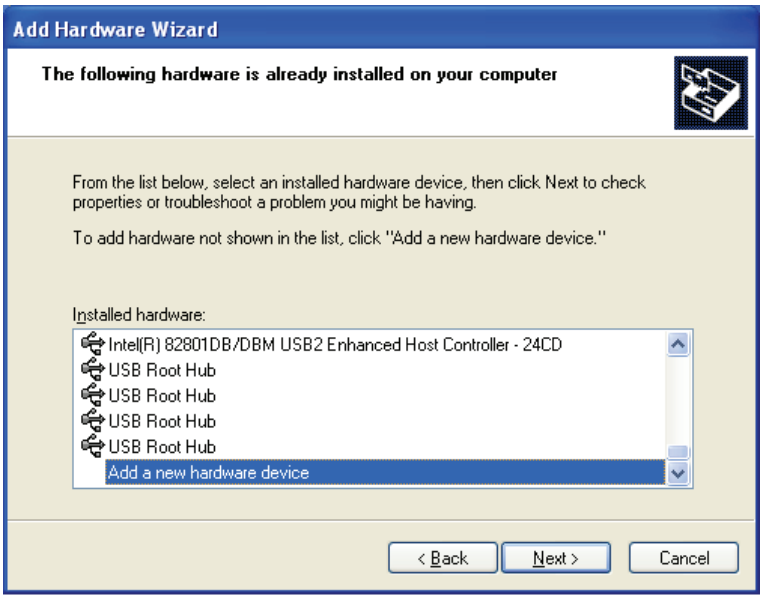
1. Select **Add Hardware Wizard** from the Control Panel. When the wizard opens, click **Next** to continue.

Add Hardware Wizard
Welcome to the Add Hardware Wizard
This wizard helps you:
• Install software to support the hardware you add to your computer.
• Troubleshoot problems you may be having with your hardware.
If your hardware came with an installation CD, it is recommended that you click Cancel to close this wizard and use the manufacturer's CD to install this hardware.
To continue, click Next.
< Back
Next >
Cancel

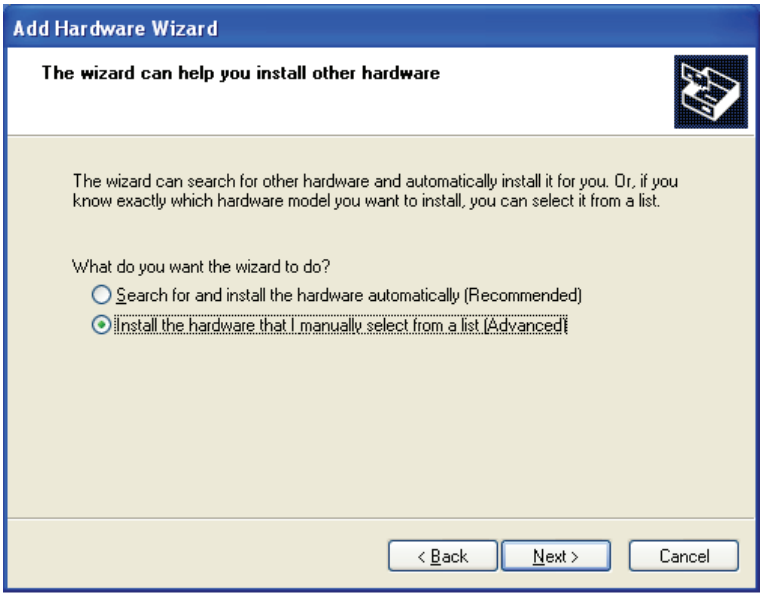
2. Select **Yes, I have already connected the hardware** and click **Next** to continue.


Add Hardware Wizard
Is the hardware connected?
Have you already connected this hardware to your computer?
Yes, I have already connected the hardware
No, I have not added the hardware yet
< Back
Next >
Cancel

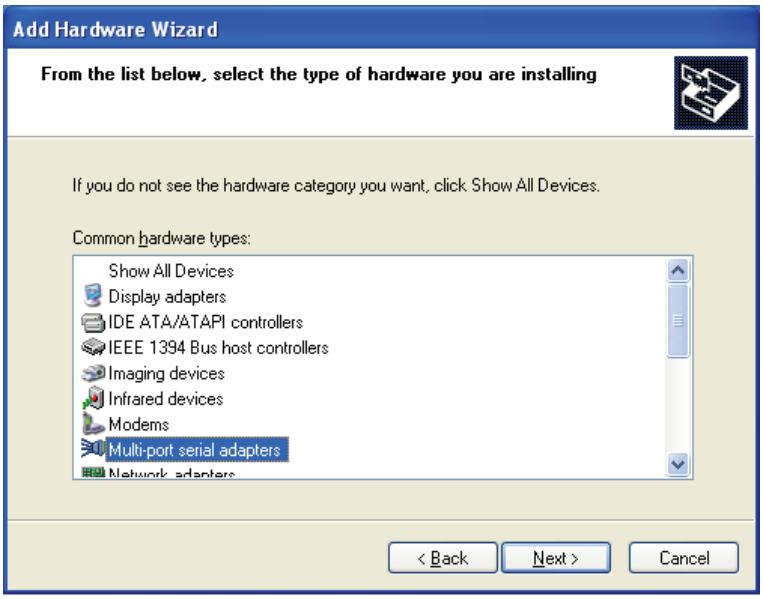
3. Select **Add a new hardware device** and click **Next** to continue.


Add Hardware Wizard
The following hardware is already installed on your computer
From the list below, select an installed hardware device, then click Next to check properties or troubleshoot a problem you might be having.
To add hardware not shown in the list, click "Add a new hardware device."
Installed hardware:
Intel(R) 82801DB/DBM USB2 Enhanced Host Controller - 24CD
USB Root Hub
USB Root Hub
USB Root Hub
USB Root Hub
Add a new hardware device
< Back
Next >
Cancel

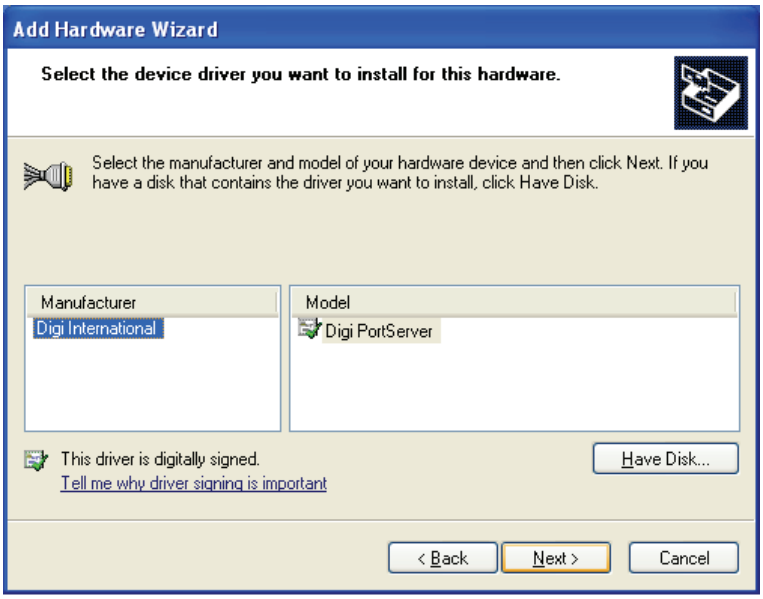
4. Select **Install the hardware that I manually select from a list (Advanced)** and click **Next** to continue.


Add Hardware Wizard
The wizard can help you install other hardware
The wizard can search for other hardware and automatically install it for you. Or, if you know exactly which hardware model you want to install, you can select it from a list.
What do you want the wizard to do?
Search for and install the hardware automatically (Recommended)
Install the hardware that I manually select from a list (Advanced)
< Back
Next >
Cancel

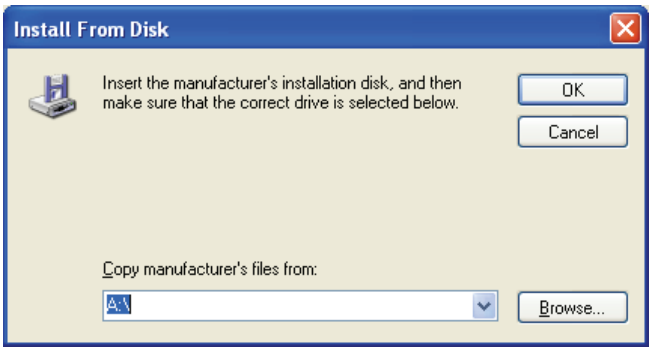
5. Select **Multi-port serial adapters** and click **Next** to continue.


Add Hardware Wizard
From the list below, select the type of hardware you are installing
If you do not see the hardware category you want, click Show All Devices.
Common hardware types:
Show All Devices
Display adapters
IDE ATA/ATAPI controllers
IEEE 1394 Bus host controllers
Imaging devices
Infrared devices
Modems
Multi-port serial adapters
< Back
Next >
Cancel

6. Click **Have Disk**.

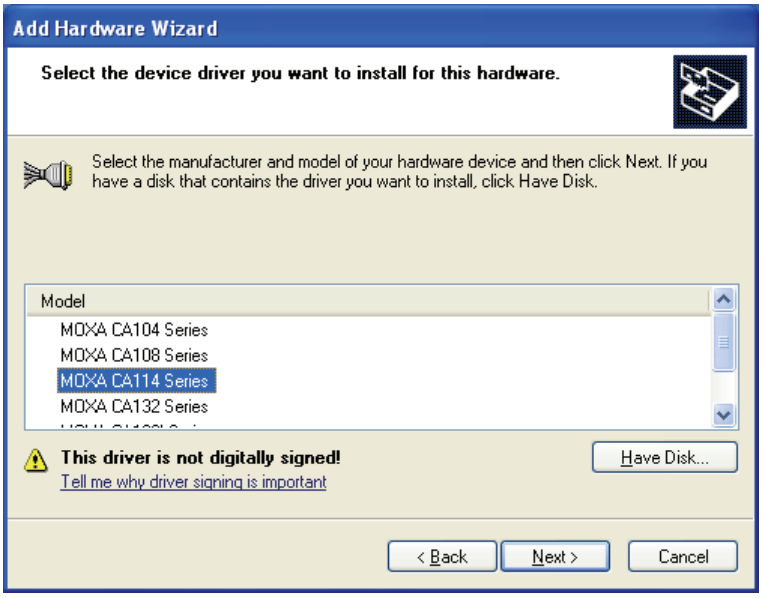

Add Hardware Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Manufacturer
Digi International
Model
Digi PortServer
This driver is digitally signed.
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

7. You will be prompted to insert the installation disk.



Insert the Document and Software CD into the CD-ROM drive and select the **\CA Series\Software\Windows XP_2003\x86** folder on the CD. Click **OK** to continue.

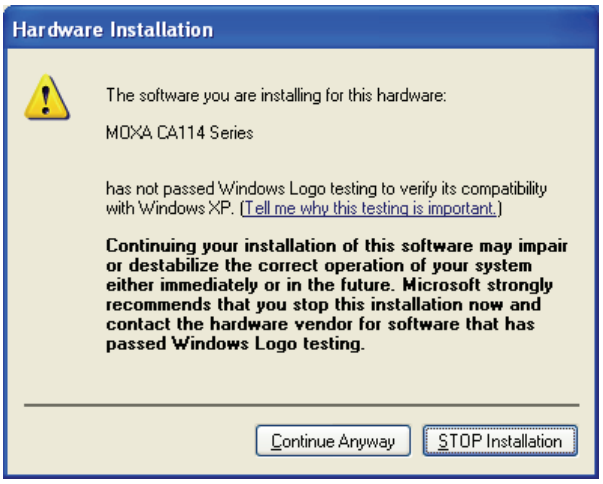
8. Select your CA Series model and click **Next** to continue.


Add Hardware Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Model
MOXA CA104 Series
MOXA CA108 Series
MOXA CA114 Series
MOXA CA132 Series
This driver is not digitally signed!
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

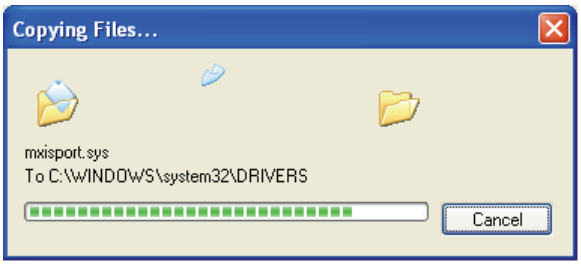
9. To begin installing the module, click **Next**.

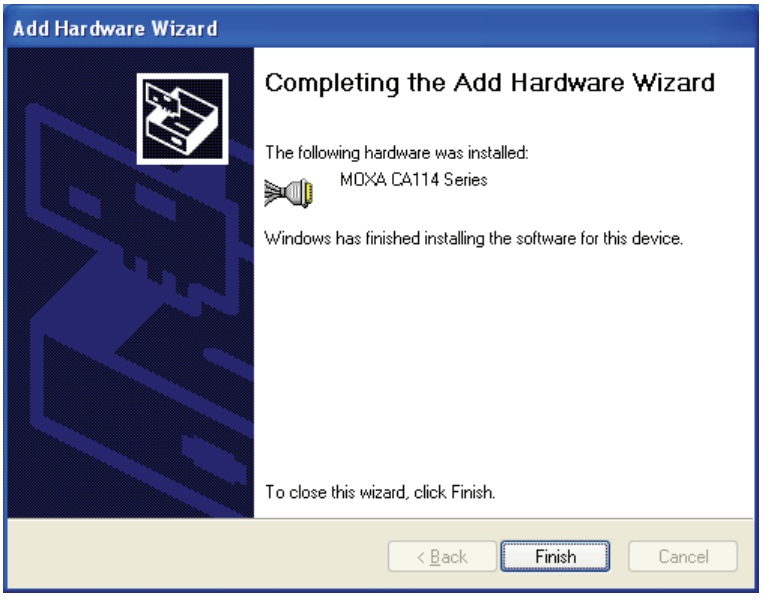
Add Hardware Wizard
The wizard is ready to install your hardware
Hardware to install:
MOXA CA114 Series
To start installing your new hardware, click Next.
< Back
Next >
Cancel

10. If you see a warning that the software has not passed Windows Logo testing, click **Continue Anyway**.


Hardware Installation
The software you are installing for this hardware:
MOXA CA114 Series
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

11. Windows will install the drivers. When the installation is complete, click **Finish**.

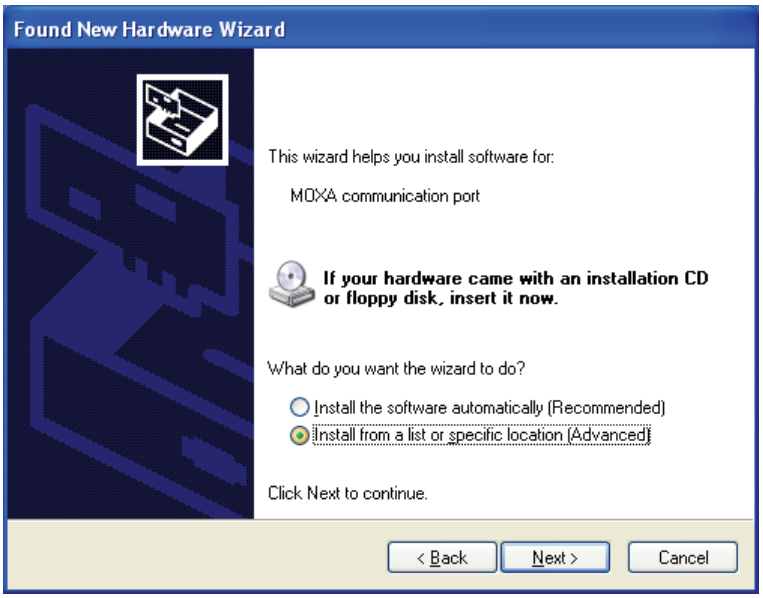




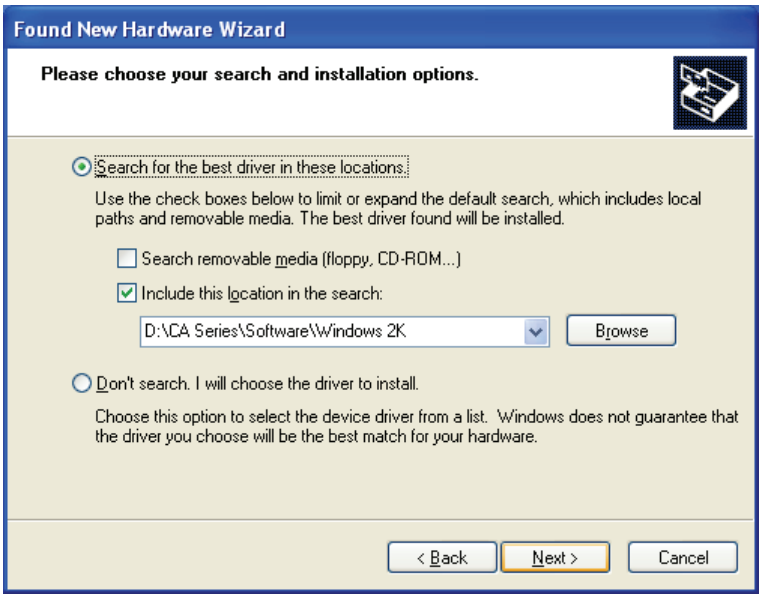
12. After the module is installed, you will be prompted to install the new serial ports. A **Found New Hardware Wizard** window will open for the first serial port, port 0. Select **No, not this time** and click **Next**.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

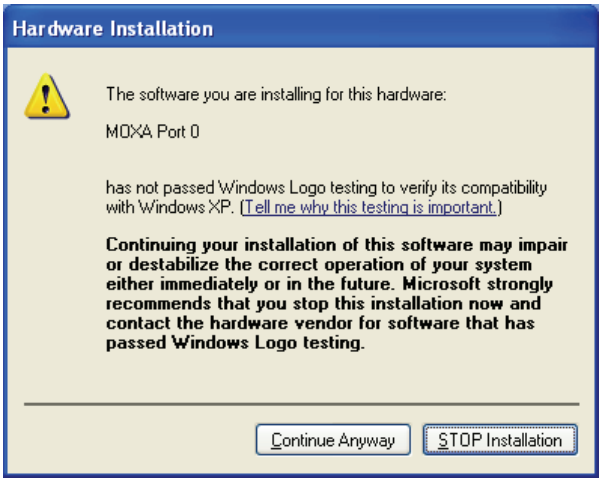
13. Select **Install from a list or specific location (Advanced)** and click **Next**.


Found New Hardware Wizard
This wizard helps you install software for:
MOXA communication port
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

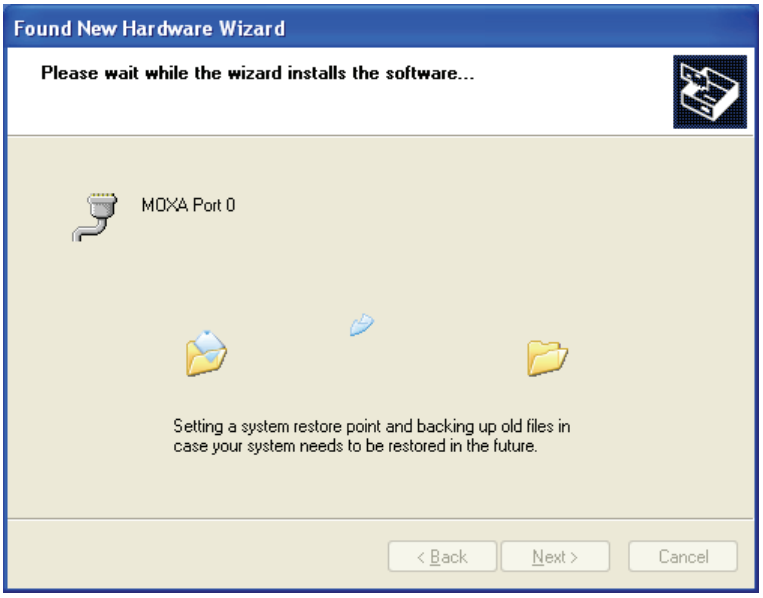
14. Select **Search for the best driver in these locations** and **Include this location in the search**. Select the **\CA Series\Software\Windows XP_2003\x86** folder on the CD and click **Next**.


Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
D:\CA Series\Software\Windows 2K
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

15. If you see a warning that the software has not passed Windows Logo testing, click **Continue Anyway**.


Hardware Installation
The software you are installing for this hardware:
MOXA Port 0
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

16. Windows will install the necessary drivers.


Found New Hardware Wizard
Please wait while the wizard installs the software...
MOXA Port 0
Setting a system restore point and backing up old files in case your system needs to be restored in the future.
< Back
Next >
Cancel

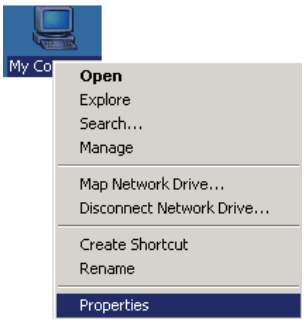
17. After the installation is complete, click **Finish**.

18. Repeat the installation process for the remaining serial ports.

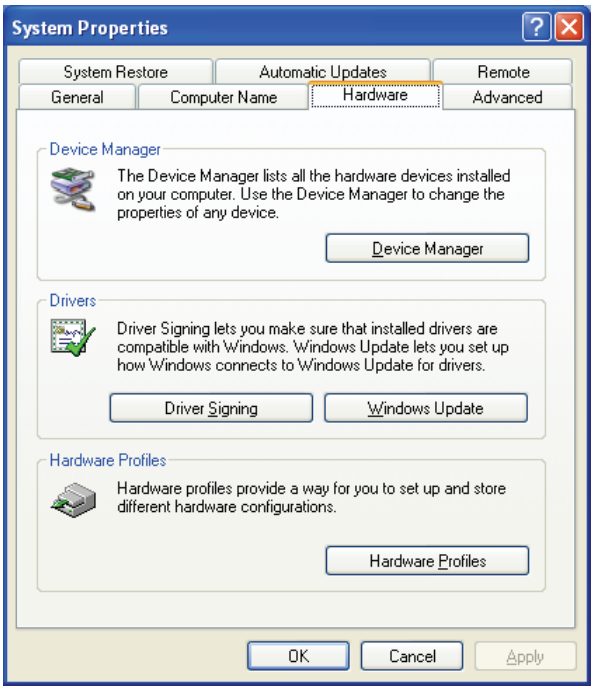
Using Device Manager to Verify Installation

You can use Windows Device Manager to verify proper installation of the CA Series module. In the following instructions, the CA-114 is used as an example.

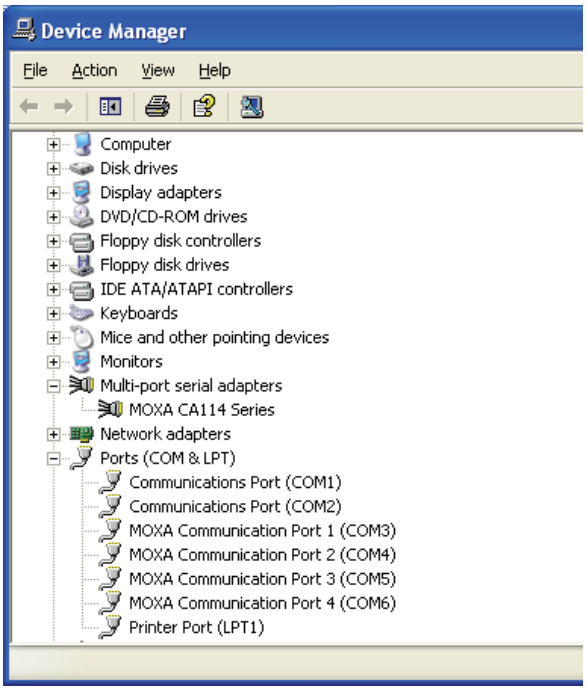
1. Right-click **My Computer** and select **Properties** in the context menu.



2. In the **Hardware** tab, click **Device Manager**.


System Properties
System Restore
Automatic Updates
Remote
General
Computer Name
Hardware
Advanced
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Device Manager
Drivers
Driver Signing lets you make sure that installed drivers are compatible with Windows. Windows Update lets you set up how Windows connects to Windows Update for drivers.
Driver Signing
Windows Update
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles
OK
Cancel
Apply

3. In the **Device Manager** window, you should see your CA Series module under M**ulti-port serial adapters**. You should also see MOXA communication ports under **Ports (COM & LPT)**.

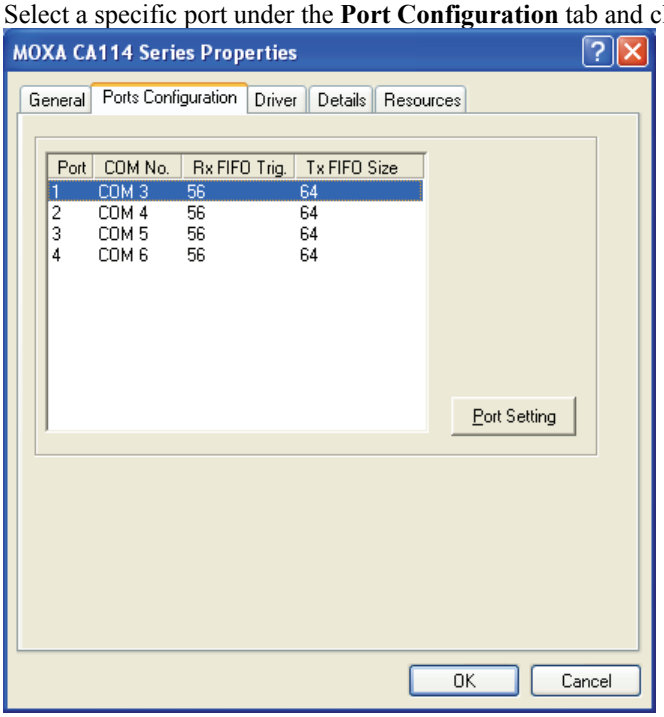


4. If you see any special marks, such as a question mark or an exclamation mark, next to the MOXA items, the installation of your module or serial ports was not successful. Examine the Windows event log for details.

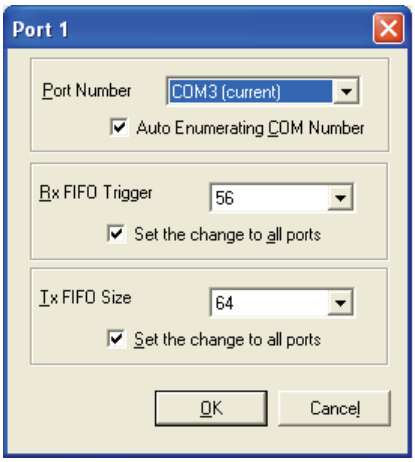
Port Configuration

After the driver is installed, a CA Series Properties window will appear. The system will map the serial ports automatically. It will prompt you to take care of port configuration if another CA Series module has been installed on the PC.

1. Select a specific port under the **Port Configuration** tab and click **Port Setting.**



2. Under **Port Number**, select a COM number to assign to the serial port.



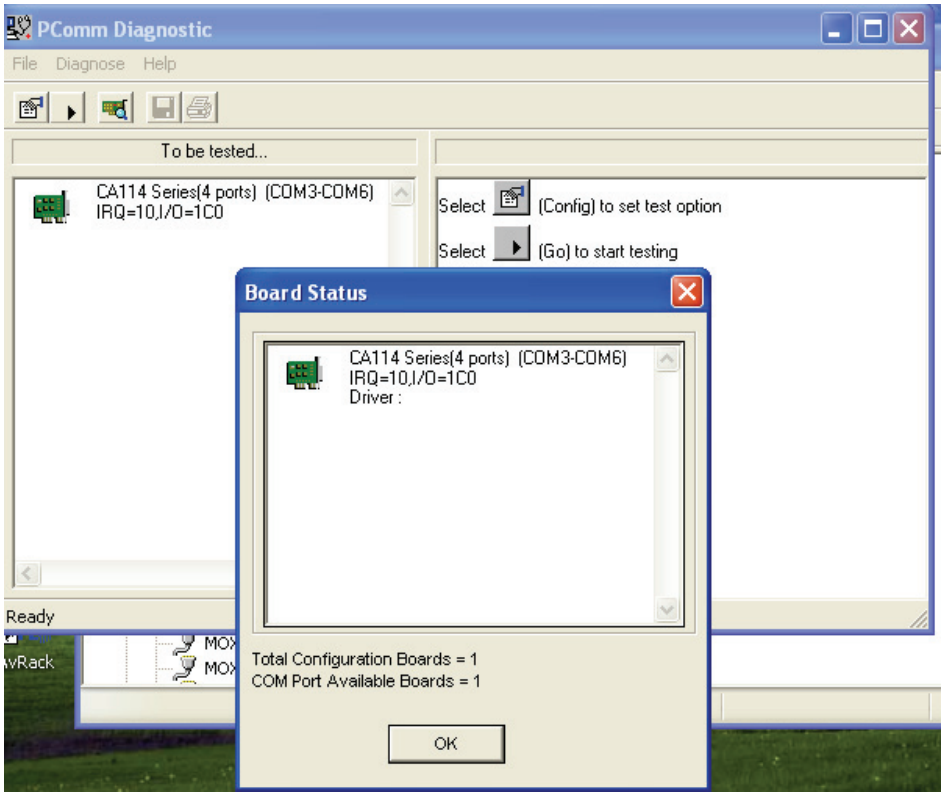
   Select **Auto Enumerating COM Number** to map subsequent ports in numerical order. For example, if COM 3 is assigned to Port 1, then COM 4 will be automatically assigned to Port 2.

3. Select an **Rx FIFO Trigger.** The default value is 56 bytes (high level). Select **Set the change to all ports** to use this setting for all serial ports on the module.
4. Select a **Tx FIFO Size**. The default value is 64 bytes (high level). Select **Set the change to all ports** to use this setting for all serial ports on the module.

5. Click **OK** to approve the port settings. Click **OK** again to close the **CA Series Properties** window and apply the new port settings.

Using PComm

PComm Diagnostic is a useful program for checking the module's status. It provides internal and external testing of IRQ, TxD/RxD, UART, CTS/RTS, DTR/DSR, and other items. You can use PComm Diagnostic to verify that the module and serial ports are working properly.



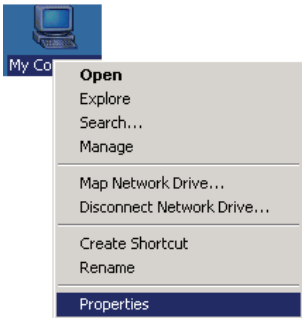
You can download the free version of PComm at Moxa's website (www.moxa.com).

Using Event Log

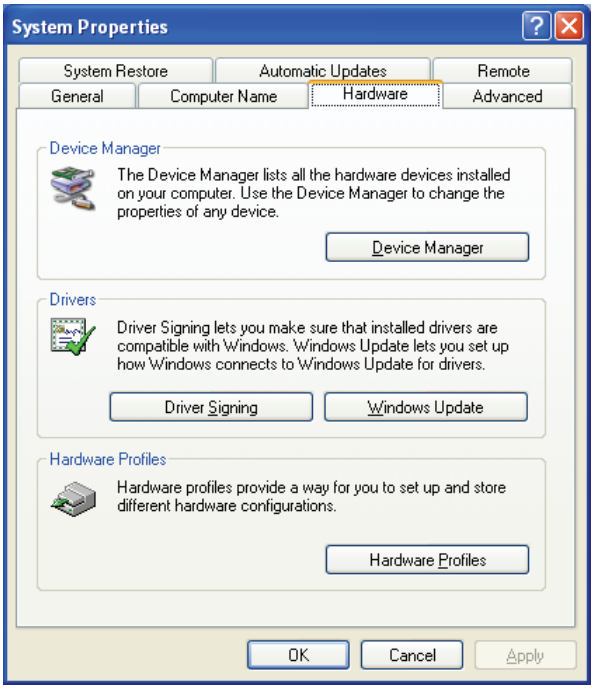
You may refer to the Windows event log to verify operation of the module. To view the event log, open Event Viewer, which is located under Administrative Tools in the Control Panel. Information about the module will be located under the System category.

Disabling the Module

1. Right-click **My Computer** and select **Properties** in the context menu.



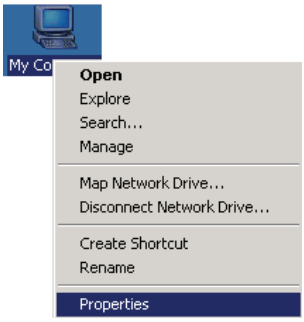
2. In the **Hardware** tab, click **Device Manager**.


System Properties
System Restore
Automatic Updates
Remote
General
Computer Name
Hardware
Advanced
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Device Manager
Drivers
Driver Signing lets you make sure that installed drivers are compatible with Windows. Windows Update lets you set up how Windows connects to Windows Update for drivers.
Driver Signing
Windows Update
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles
OK
Cancel
Apply

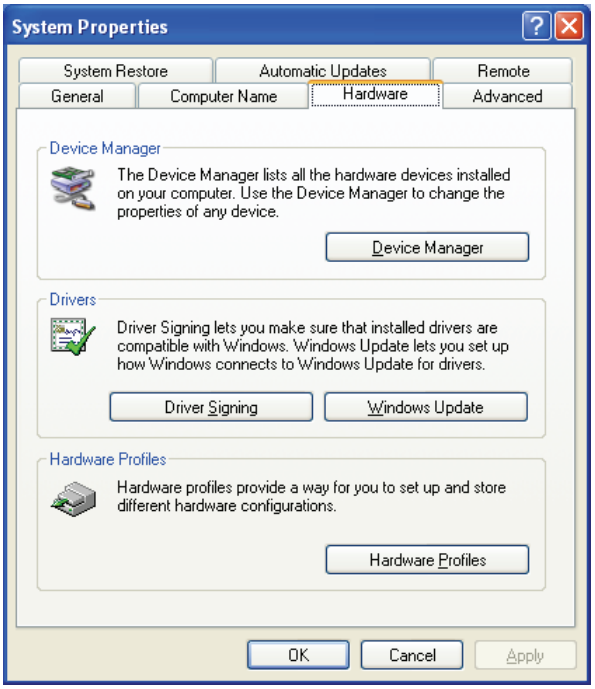
3. In **Device Manager**, right-click your module under **Multi-port serial adapters** and select **Disable** in the context menu. This will disable the module.

Uninstalling the Module

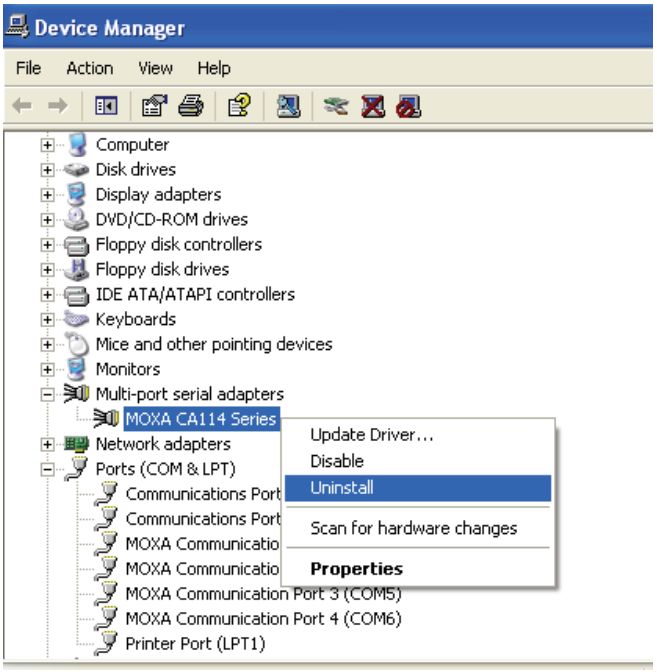
1. Right-click **My Computer** and select **Properties** in the context menu.



2. In the **Hardware** tab, click **Device Manager**.


System Properties
System Restore
Automatic Updates
Remote
General
Computer Name
Hardware
Advanced
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Device Manager
Drivers
Driver Signing lets you make sure that installed drivers are compatible with Windows. Windows Update lets you set up how Windows connects to Windows Update for drivers.
Driver Signing
Windows Update
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles
OK
Cancel
Apply

3. Right-click your module under **Multi-port serial adapters** and select **Uninstall** in the context menu.



4. A confirmation dialog will appear. Click **OK** to uninstall the device.

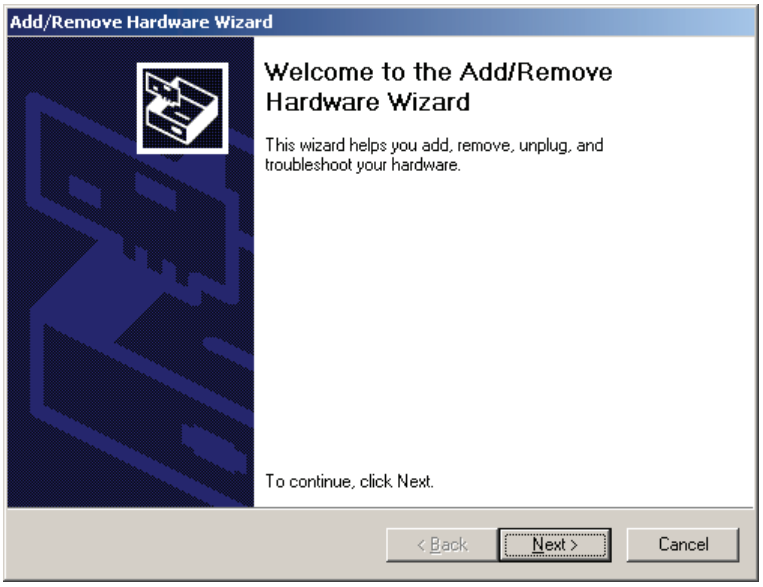
Windows 2000

The Windows 2000 drivers conform to the Win32 COMM API standard and support all models in the CA Series. In the following instructions, the CA-114 is used as an example.

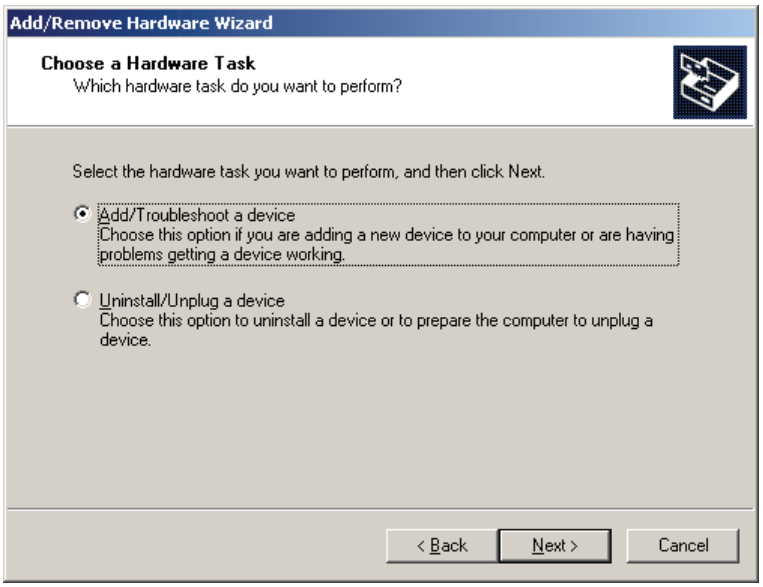
Installing the Driver

1. Open **Add/Remove Hardware** in the **Control Panel**.

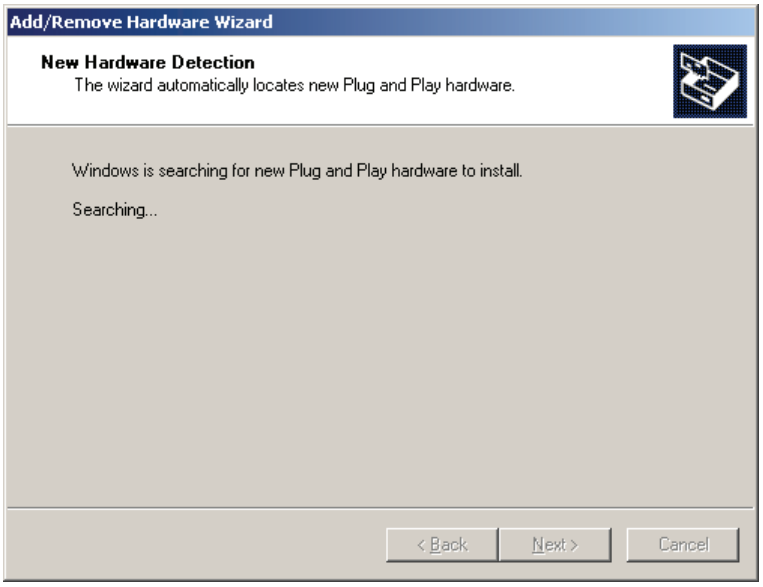
2. The **Add/Remove Hardware Wizard** window will open. Click **Next** to continue.


Add/Remove Hardware Wizard
Welcome to the Add/Remove Hardware Wizard
This wizard helps you add, remove, unplug, and troubleshoot your hardware.
To continue, click Next.
< Back
Next >
Cancel

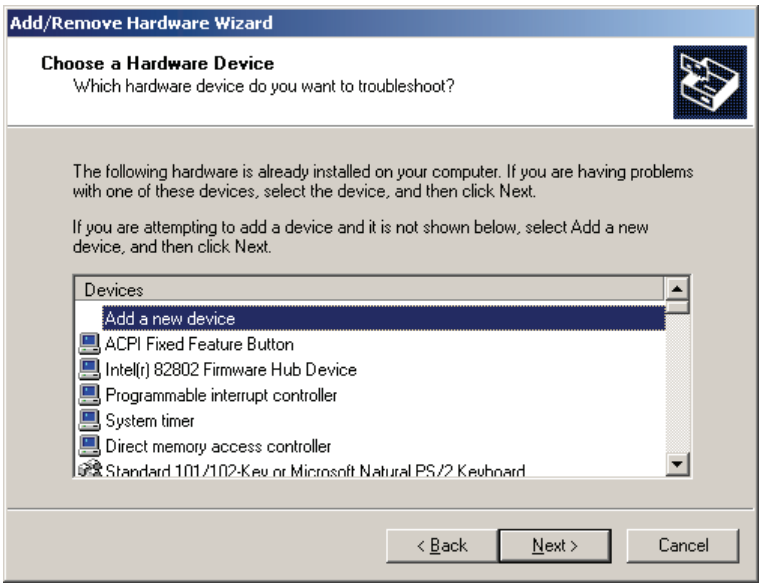
3. Select **Add/Troubleshoot a device** and click **Next**.


Add/Remove Hardware Wizard
Choose a Hardware Task
Which hardware task do you want to perform?
Select the hardware task you want to perform, and then click Next.
Add/Troubleshoot a device
Choose this option if you are adding a new device to your computer or are having problems getting a device working.
Uninstall/Unplug a device
Choose this option to uninstall a device or to prepare the computer to unplug a device.
< Back
Next >
Cancel

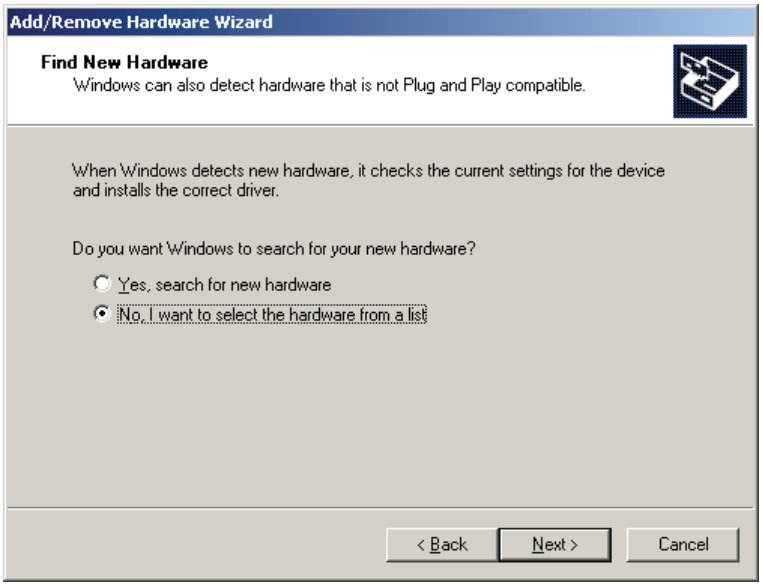
4. Windows will search for new hardware.


Add/Remove Hardware Wizard
New Hardware Detection
The wizard automatically locates new Plug and Play hardware.
Windows is searching for new Plug and Play hardware to install.
Searching...
< Back
Next >
Cancel

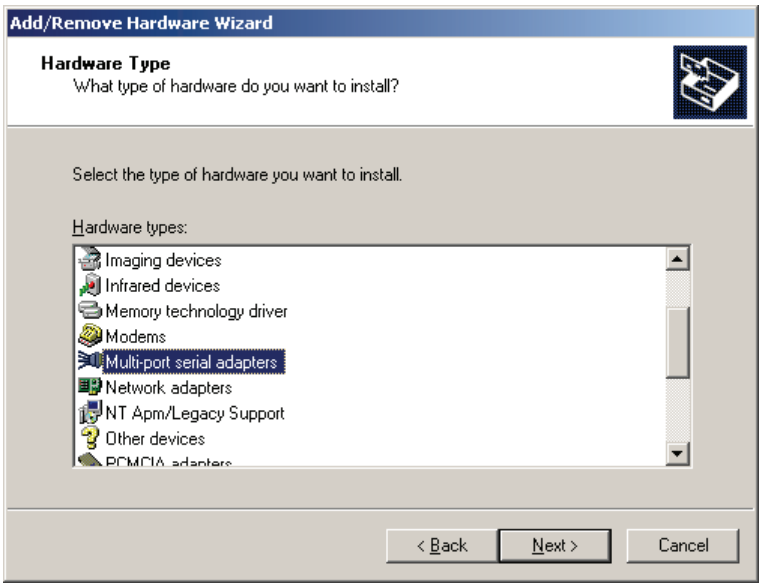
5. When the search is complete, select **Add a new device** and click **Next** to continue.


Add/Remove Hardware Wizard
Choose a Hardware Device
Which hardware device do you want to troubleshoot?
The following hardware is already installed on your computer. If you are having problems with one of these devices, select the device, and then click Next.
If you are attempting to add a device and it is not shown below, select Add a new device, and then click Next.
Devices
Add a new device
ACPI Fixed Feature Button
Intel(r) 82802 Firmware Hub Device
Programmable interrupt controller
System timer
Direct memory access controller
< Back
Next >
Cancel

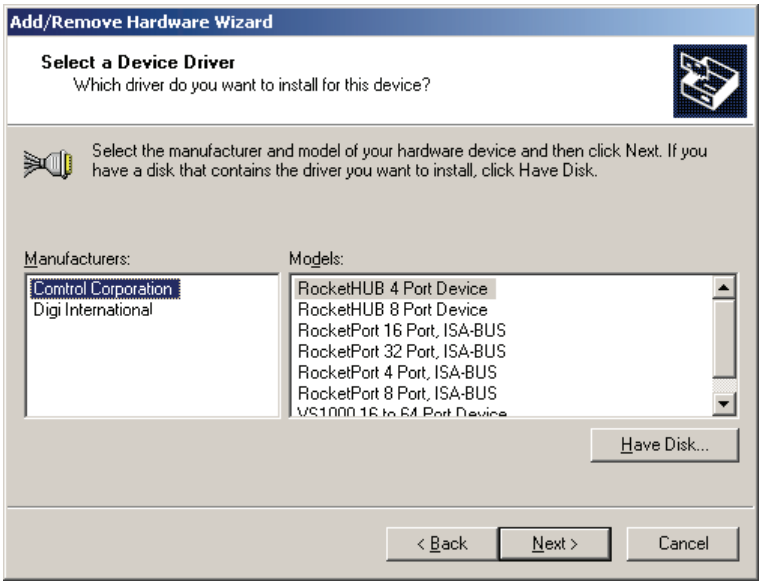
6. Select **No, I want to select the hardware from a list** and click **Next** to continue.


Add/Remove Hardware Wizard
Find New Hardware
Windows can also detect hardware that is not Plug and Play compatible.
When Windows detects new hardware, it checks the current settings for the device and installs the correct driver.
Do you want Windows to search for your new hardware?
Yes, search for new hardware
No, I want to select the hardware from a list
< Back
Next >
Cancel

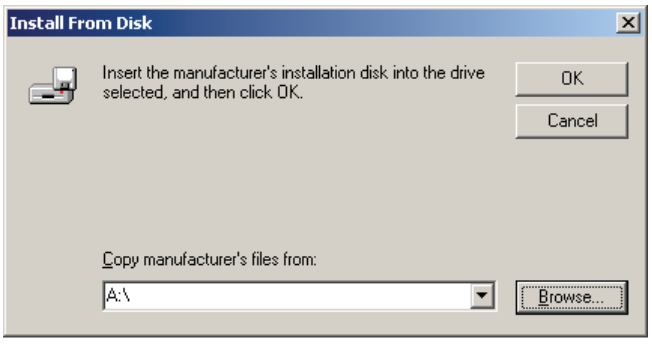
7. Select **Multi-port serial adapters** and click **Next** to continue.



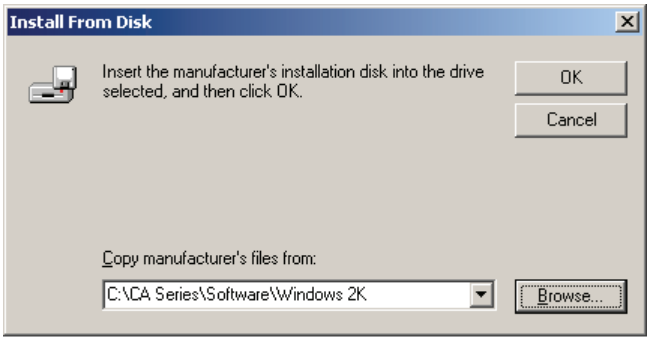
8. Click **Have Disk**.


Add/Remove Hardware Wizard
Select a Device Driver
Which driver do you want to install for this device?
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Manufacturers:
Comtrol Corporation
Digi International
Models:
RocketHUB 4 Port Device
RocketHUB 8 Port Device
RocketPort 16 Port, ISA-BUS
RocketPort 32 Port, ISA-BUS
RocketPort 4 Port, ISA-BUS
RocketPort 8 Port, ISA-BUS
Have Disk...
< Back
Next >
Cancel

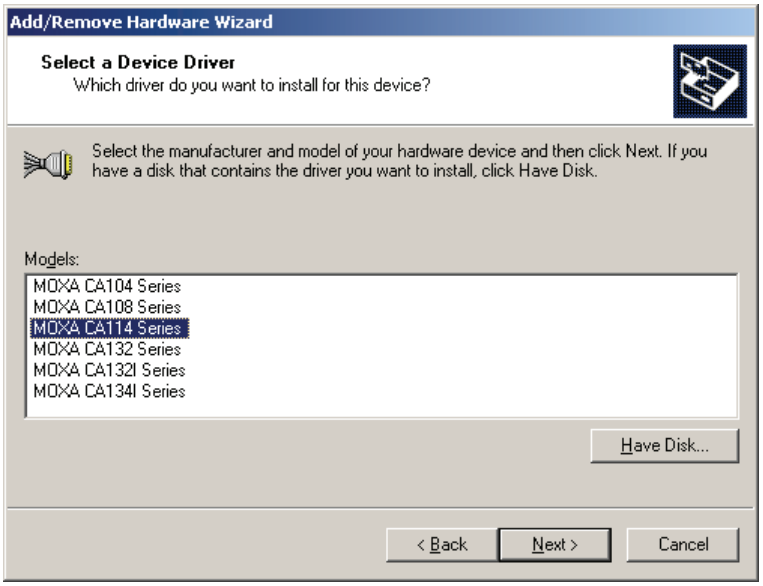
9. You will be prompted to insert the installation disk.



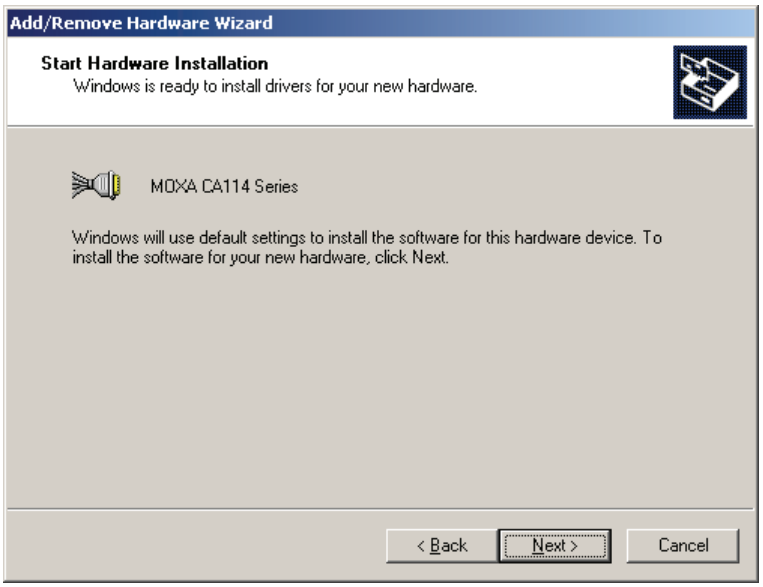
Insert the Document and Software CD into the CD-ROM drive and select the **\CA Series\Software\Windows 2K** folder on the CD. Click **OK** to continue.



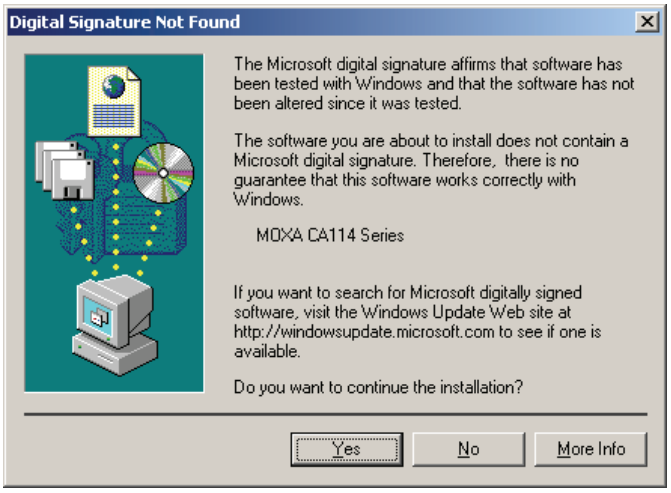
10. Select your CA Series model and click **Next** to continue.


Add/Remove Hardware Wizard
Select a Device Driver
Which driver do you want to install for this device?
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Models:
MOXA CA104 Series
MOXA CA108 Series
MOXA CA114 Series
MOXA CA132 Series
MOXA CA132I Series
MOXA CA134I Series
Have Disk...
< Back
Next >
Cancel

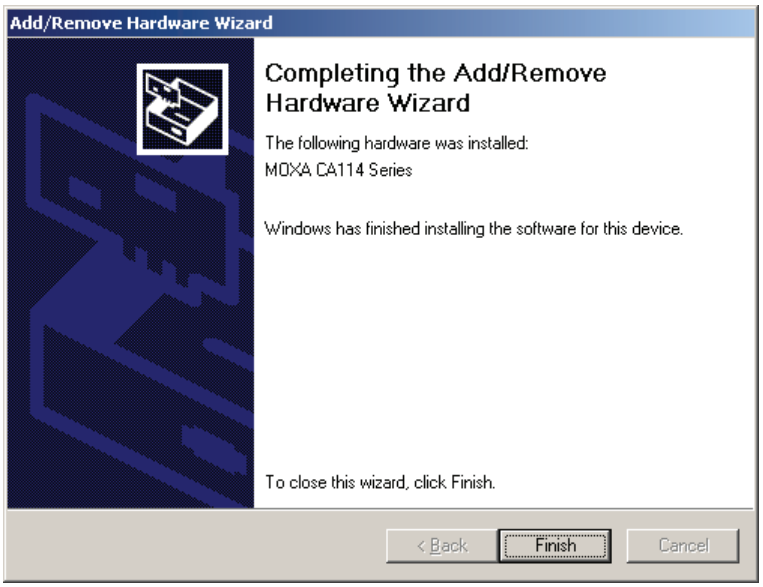
11. To begin installing the module, click **Next**.


Add/Remove Hardware Wizard
Start Hardware Installation
Windows is ready to install drivers for your new hardware.
MOXA CA114 Series
Windows will use default settings to install the software for this hardware device. To install the software for your new hardware, click Next.
< Back
Next >
Cancel

12. If you see a warning that the Microsoft digital signature was not found, click **Yes** to proceed with the installation.


Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
MOXA CA114 Series
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

13. Windows will install the drivers. When the installation is complete, click **Finish**.



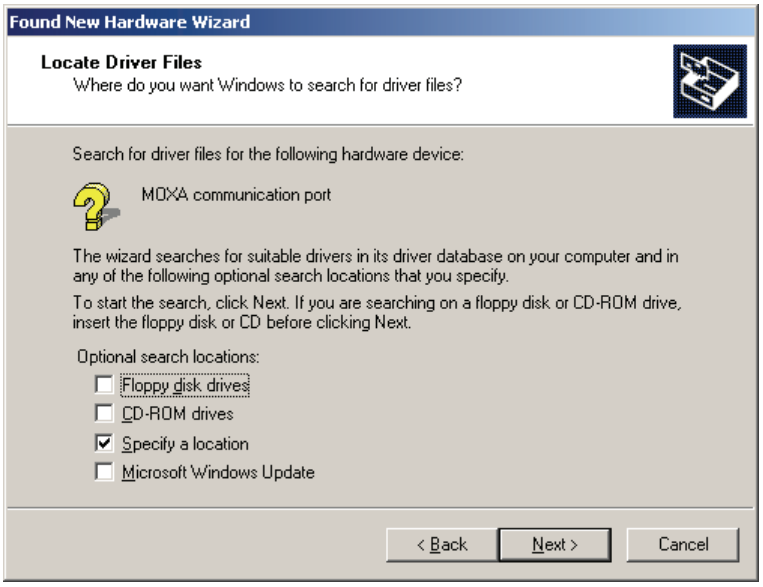
14. After the module is installed, you will be prompted to install the new serial ports. A **Found New Hardware Wizard** window will open for the first serial port, port 0. Click **Next** to proceed.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install a device driver for a hardware device.
To continue, click Next.
< Back
Next >
Cancel

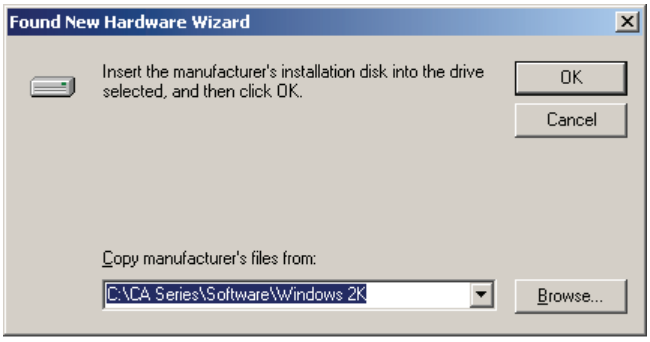
15. Select **Search for a suitable driver for my device [recommended]** and click **Next**.

Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
MOXA communication port
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device [recommended]
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

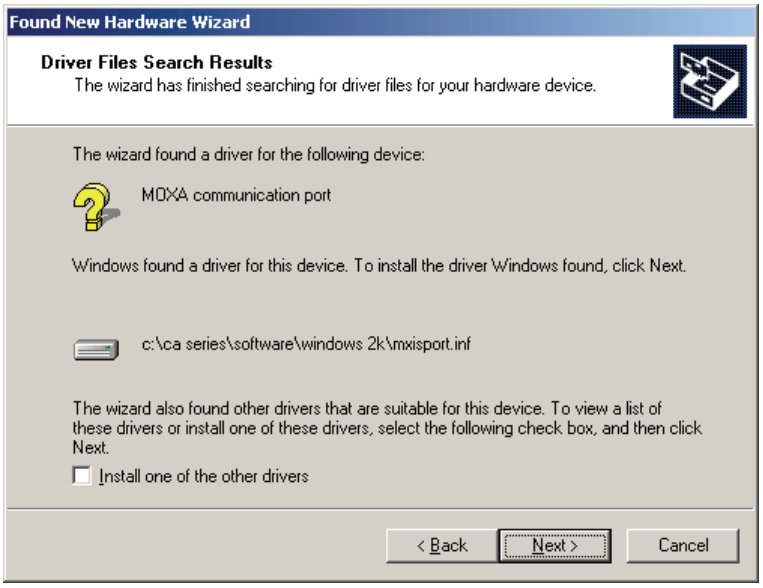
16. Select **Specify a location** and click **Next**.


Found New Hardware Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
MOXA communication port
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

17. Select the **\CA Series\Software\Windows 2K** folder on the CD and click **Next**.



18. When the driver has been found, click **Next** to proceed.


Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
MOXA communication port
Windows found a driver for this device. To install the driver Windows found, click Next.
c:\ca series\software\windows 2k\mxisport.inf
The wizard also found other drivers that are suitable for this device. To view a list of these drivers or install one of these drivers, select the following check box, and then click Next.
Install one of the other drivers
< Back
Next >
Cancel

19. Windows will install the necessary drivers. After the installation is complete, click **Finish**.

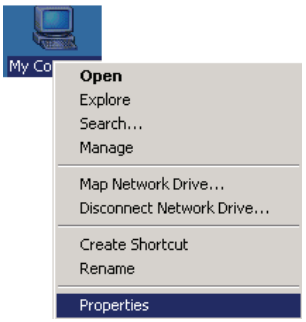
Found New Hardware Wizard
Completing the Found New Hardware Wizard
MOXA Port 0
Windows has finished installing the software for this device.
To close this wizard, click Finish.
< Back
Finish
Cancel

The remaining serial ports will be installed automatically in the background.

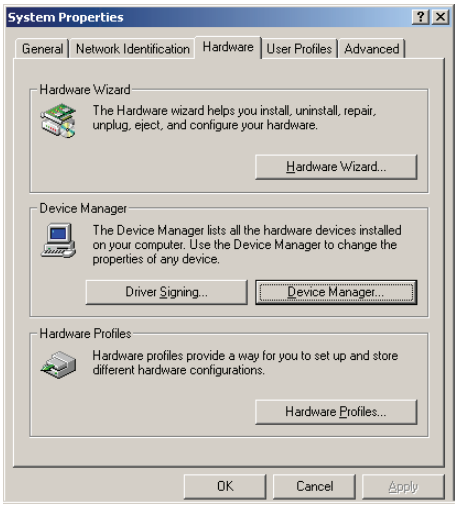
Using Device Manager to Verify Installation

You can use Windows Device Manager to verify proper installation of the CA Series module. In the following instructions, the CA-114 is used as an example.

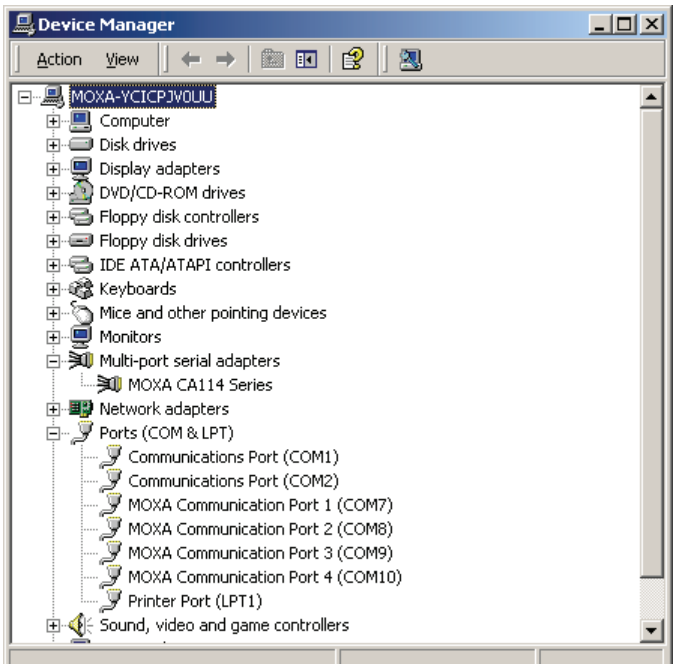
1. Right-click **My Computer** and select **Properties** in the context menu.



2. In the **Hardware** tab, click **Device Manager**.


System Properties
General
Network Identification
Hardware
User Profiles
Advanced
Hardware Wizard
The Hardware wizard helps you install, uninstall, repair, unplug, eject, and configure your hardware.
Hardware Wizard...
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Driver Signing...
Device Manager...
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles...
OK
Cancel
Apply

3. In the **Device Manager** window, you should see your CA Series module under M**ulti-port serial adapters**. You should also see MOXA communication ports under **Ports (COM & LPT)**.

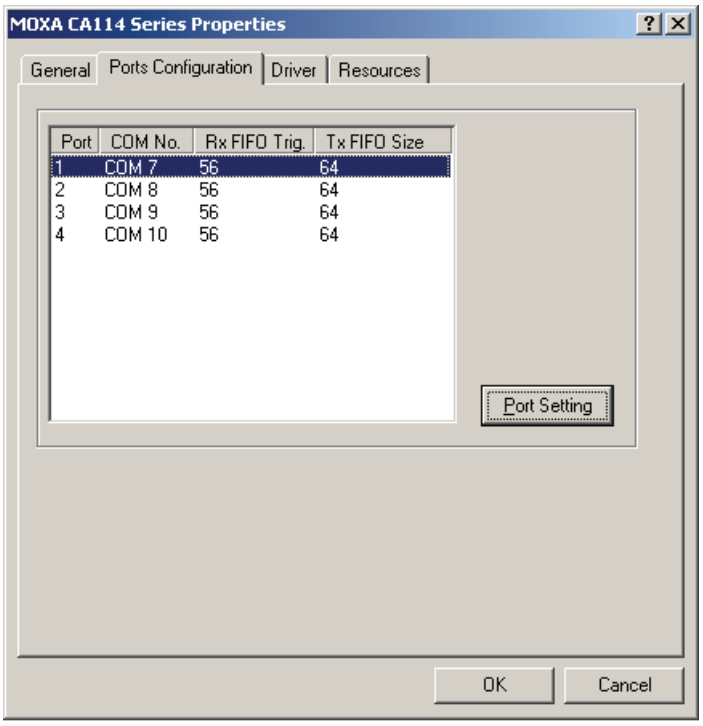


4. If you see any special marks, such as a question mark or an exclamation mark, next to the MOXA items, the installation of your module or serial ports was not successful. You can check the Windows event log for details.

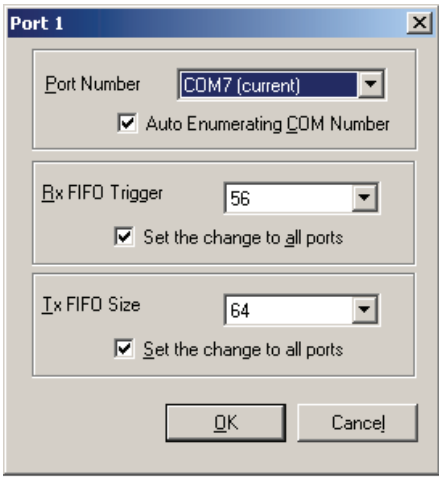
Port Configuration

After the driver is installed, a CA Series Properties window will appear. The system will map the serial ports automatically. It will prompt you to take care of port configuration if another CA Series module has been installed on the PC.

1. Select a specific port under the **Port Configuration** tab and click **Port Setting.**



2. Under **Port Number**, select a COM number to assign to the serial port.



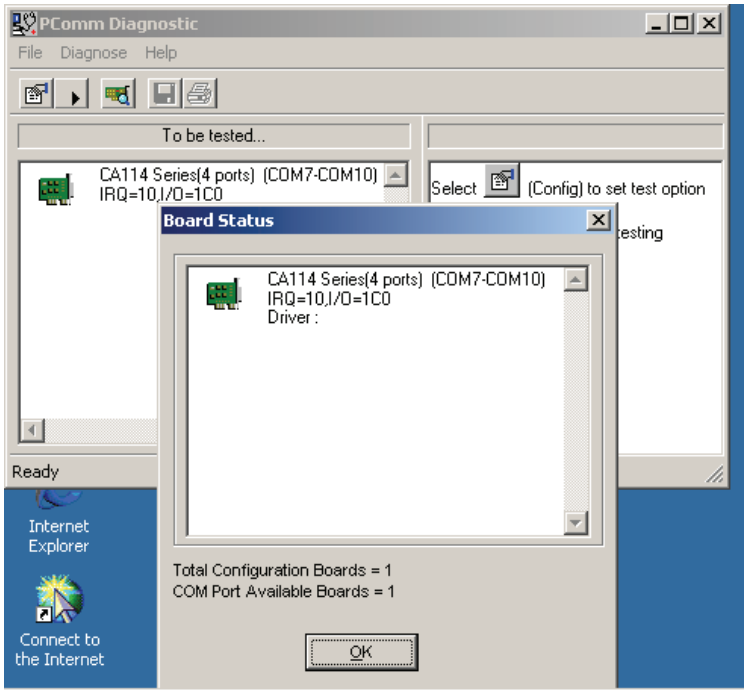
Select **Auto Enumerating COM Number** to map subsequent ports in numerical order. For example, if COM 3 is assigned to Port 1, then COM 4 will be automatically assigned to Port 2.

3. Select an **Rx FIFO Trigger.** The default value is 56 bytes (high level). Select **Set the change to all ports** to use this setting for all serial ports on the module.

4. Select a **Tx FIFO Size**. The default value is 64 bytes (high level). Select **Set the change to all ports** to use this setting for all serial ports on the module.
5. Click **OK** to approve the port settings. Click **OK** again to close the **CA Series Properties** window and apply the new port settings.

Using PComm

PComm Diagnostic is a useful program for checking the module's status. It provides internal and external testing of IRQ, TxD/RxD, UART, CTS/RTS, DTR/DSR, and other items. You can use PComm Diagnostic to verify that the module and serial ports are working properly.



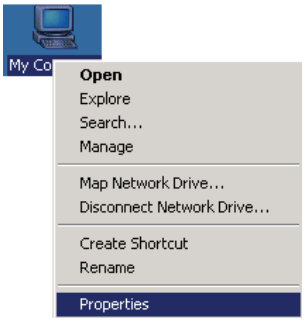
The free version of PComm is available at Moxa's website (www.moxa.com).

Using Event Log

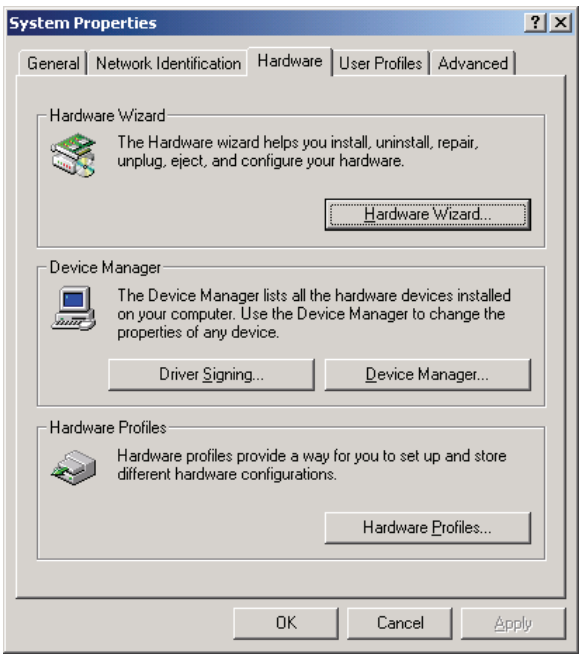
You may refer to the Windows event log to verify operation of the module. To view the event log, open Event Viewer, which is located under Administrative Tools in the Control Panel. Information about the module will be located under the System category.

Disabling the Module

1. Right-click **My Computer** and select **Properties** in the context menu.



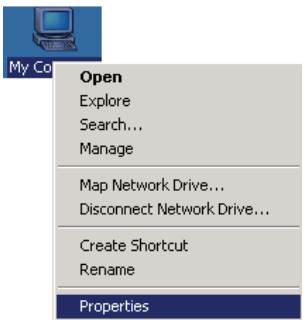
2. In the **Hardware** tab, click **Device Manager**.


System Properties
General
Network Identification
Hardware
User Profiles
Advanced
Hardware Wizard
The Hardware wizard helps you install, uninstall, repair, unplug, eject, and configure your hardware.
Hardware Wizard...
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Driver Signing...
Device Manager...
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles...
OK
Cancel
Apply

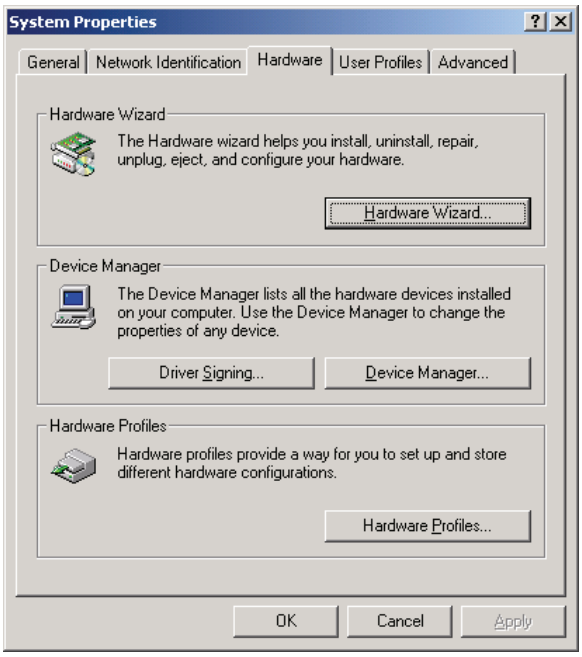
3. In **Device Manager**, right-click your module under **Multi-port serial adapters** and select **Disable** in the context menu. This will disable the module.

Uninstalling the Module

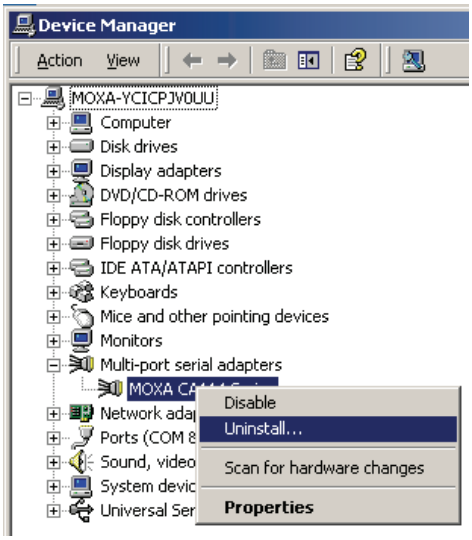
1. Right-click **My Computer** and select **Properties** in the context menu.



2. In the **Hardware** tab, click **Device Manager**.


System Properties
General
Network Identification
Hardware
User Profiles
Advanced
Hardware Wizard
The Hardware wizard helps you install, uninstall, repair, unplug, eject, and configure your hardware.
Hardware Wizard...
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Driver Signing...
Device Manager...
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles...
OK
Cancel
Apply

3. Right-click your module under **Multi-port serial adapters** and select **Uninstall** in the context menu.



4. A confirmation dialog will appear. Click **OK** to uninstall the device.

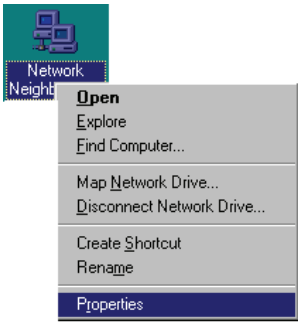
Windows NT

The Windows NT drivers conform to the Win32 COMM API standard and support the CA-104 V2, CA-104-T V2, CA-132 V2, CA-132-T V2, CA-132I V2, and CA-132I-T V2. The CA-108, CA-114, and CA-134I models are not supported under Windows NT.

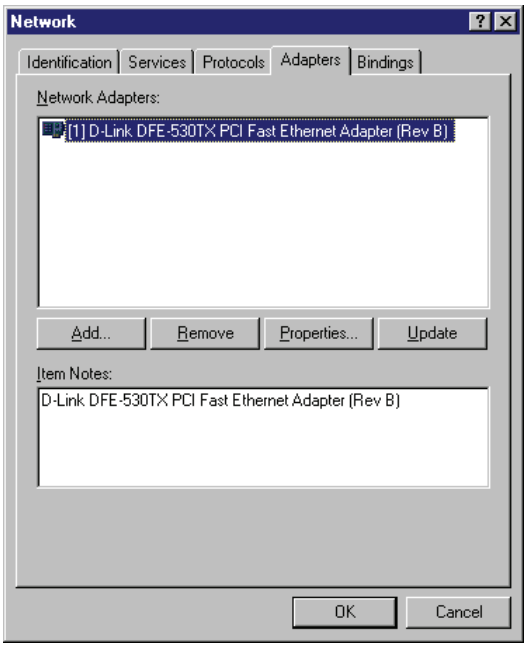
In the following instructions, the CA-104 V2 is used as an example.

Installing the Driver

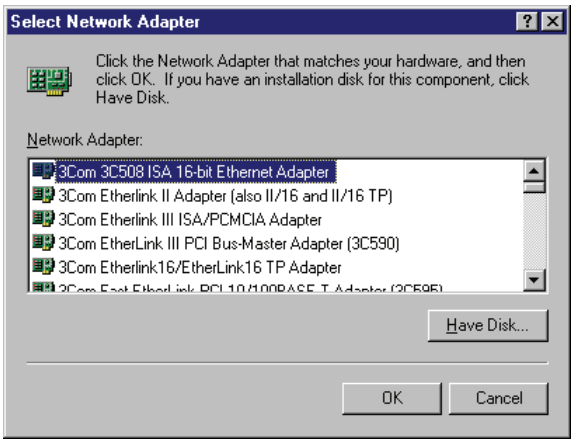
1. Right-click **Network Neighborhood** and select **Properties** in the context menu.



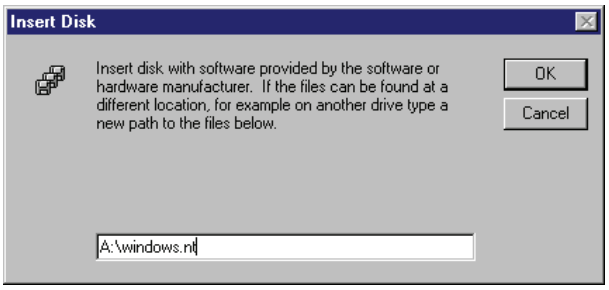
2. Under the **Adapters** tab, click **Add…**.



3. When prompted to select a network adapter, click **Have Disk**.

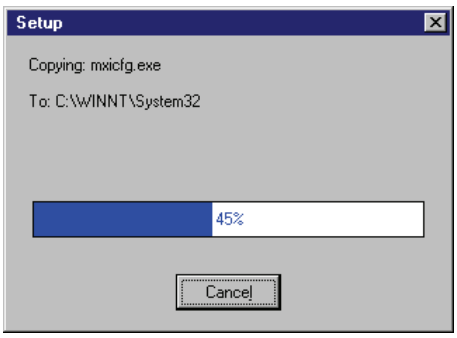

Select Network Adapter
Click the Network Adapter that matches your hardware, and then click OK. If you have an installation disk for this component, click Have Disk.
Network Adapter:
3Com 3C508 ISA 16-bit Ethernet Adapter
3Com Etherlink II Adapter (also II/16 and II/16 TP)
3Com Etherlink III ISA/PCMCIA Adapter
3Com EtherLink III PCI Bus-Master Adapter (3C590)
3Com Etherlink16/EtherLink16 TP Adapter
Have Disk...
OK
Cancel

4. At the prompt, insert the installation disk provided with your module.

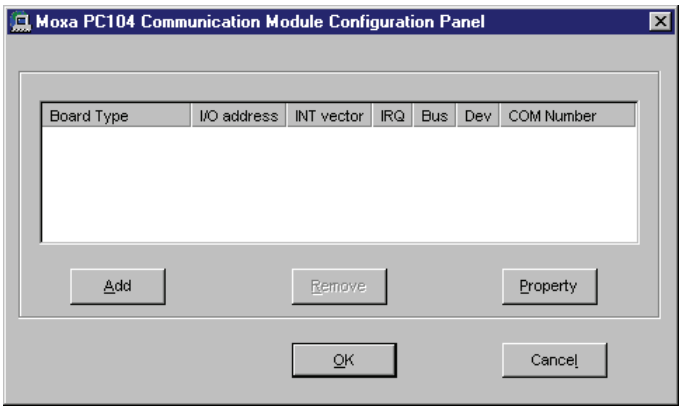

Insert Disk
Insert disk with software provided by the software or hardware manufacturer. If the files can be found at a different location, for example on another drive type a new path to the files below.
OK
Cancel
A:\windows.nt

For the location, enter **A:\windows.nt**. Click **OK** to continue.

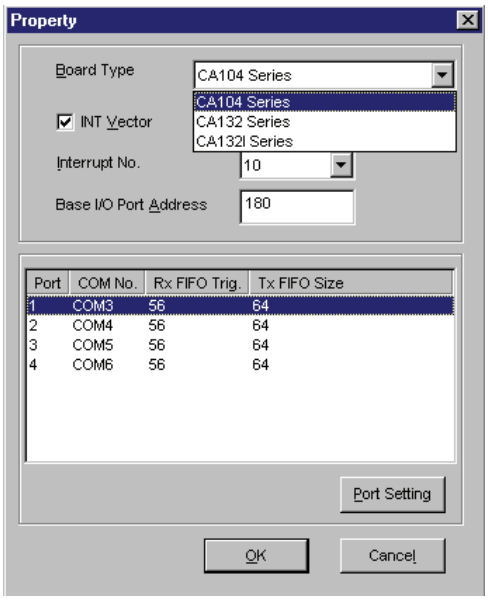
5. Windows will install the drivers.



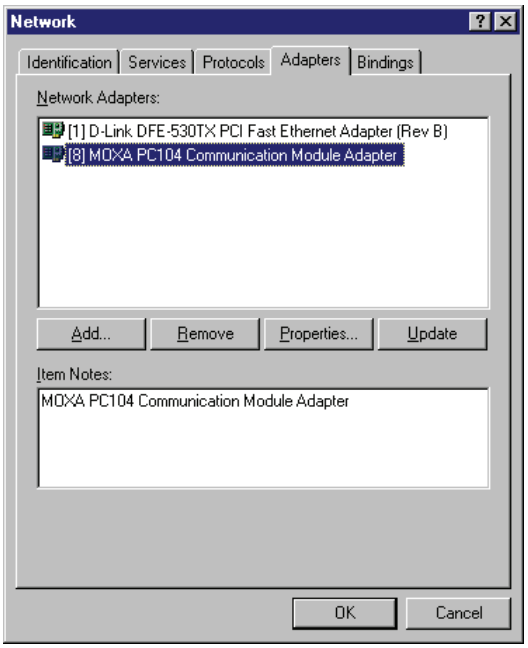
6. After the files have been installed, a configuration panel will open. Click **Add** to continue.



7. Under **Board Type**, select your CA Series model. The window will show the COM port numbers that will be assigned to the CA Series serial ports, as well as other settings. Click **OK** to continue.

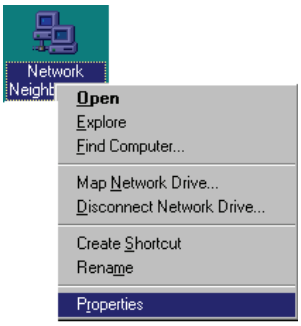


8. The CA Series module will appear as a network adapter. Click **OK** to complete installation of the module.

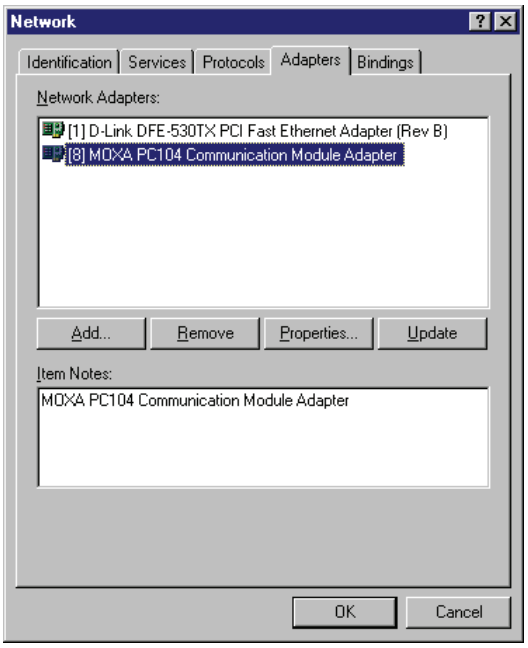


Uninstalling the Module

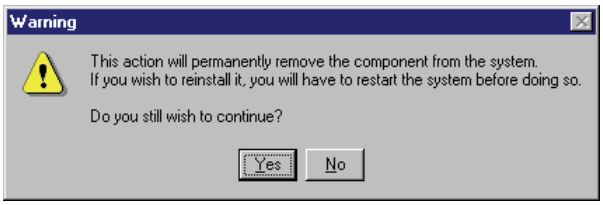
1. Right-click **Network Neighborhood** and select **Properties** in the context menu.



2. In the **Adapters** tab, select your CA Series module and click **Remove**.



3. A confirmation dialog will appear. Click **OK** to uninstall the device.


Warning
This action will permanently remove the component from the system.
If you wish to reinstall it, you will have to restart the system before doing so.
Do you still wish to continue?
Yes
No

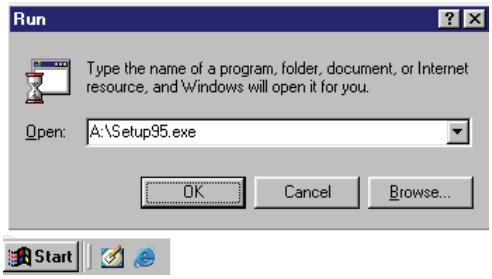
Windows 95, 98, ME

The Windows 95/98/ME drivers conform to the Win32 COMM API standard and support the CA-104 V2, CA-104-T V2, CA-132 V2, CA-132-T V2, CA-132I V2, and CA-132I-T V2. The CA-108, CA-114, and CA-134I models are not supported under Windows 95, 98, or ME.

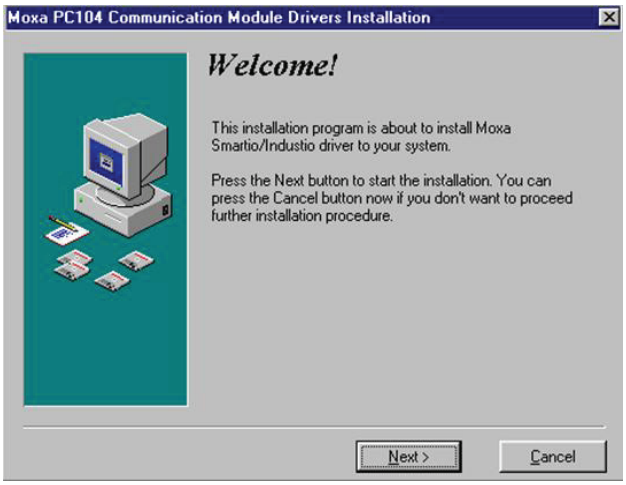
In the following instructions, the CA-104 is used as an example.

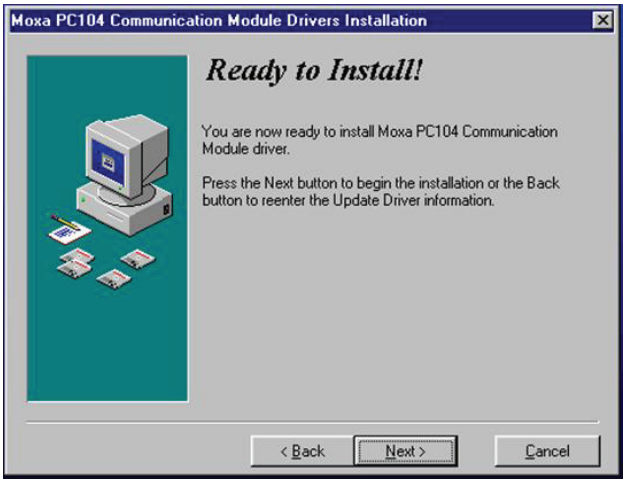
Installing the Driver

1. Insert the CA Series installation disk and run **Setup95.exe** through **Start menu → Run**.

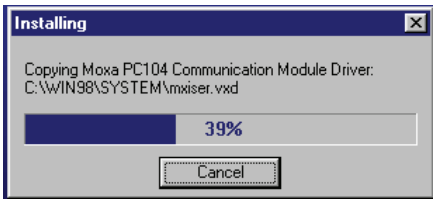


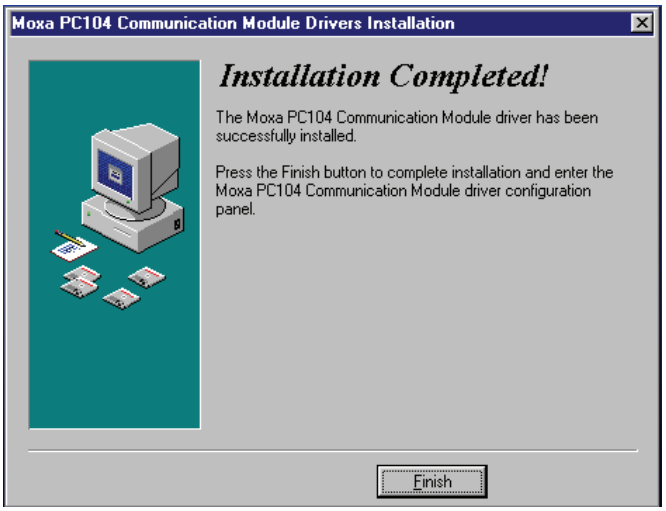
2. Click **Next** to proceed through the welcome screens.


Moxa PC104 Communication Module Drivers Installation
Welcome!
This installation program is about to install Moxa Smartio/Industio driver to your system.
Press the Next button to start the installation. You can press the Cancel button now if you don't want to proceed further installation procedure.
Next >
Cancel

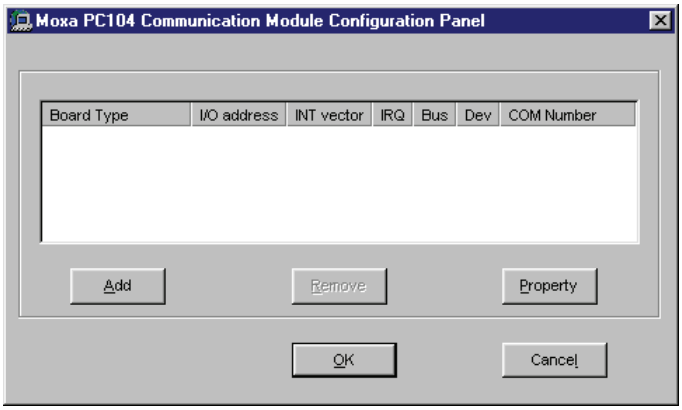

Moxa PC104 Communication Module Drivers Installation
Ready to Install!
You are now ready to install Moxa PC104 Communication Module driver.
Press the Next button to begin the installation or the Back button to reenter the Update Driver information.
< Back
Next >
Cancel

3. Windows will install the drivers. When the installation is complete, click **Finish**.

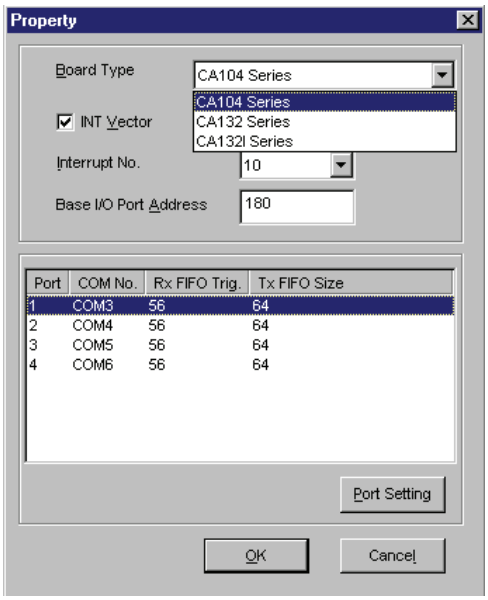



Moxa PC104 Communication Module Drivers Installation
Installation Completed!
The Moxa PC104 Communication Module driver has been successfully installed.
Press the Finish button to complete installation and enter the Moxa PC104 Communication Module driver configuration panel.
Finish

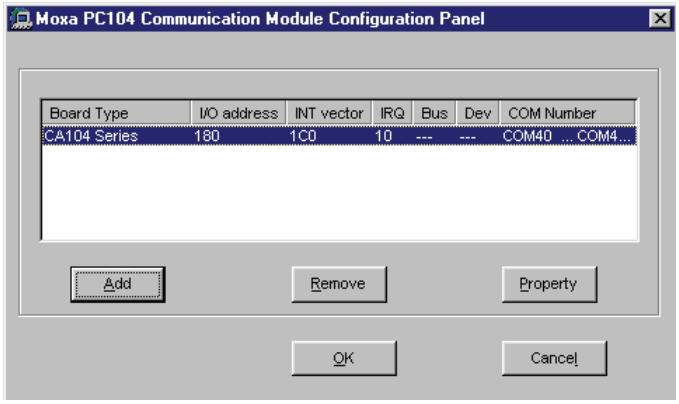
4. After the files have been installed, a configuration panel will open. Click **Add** to continue.



5. Under **Board Type**, select your CA Series model. The window will show the COM port numbers that will be assigned to the CA Series serial ports, as well as other settings. Click **OK** to continue.



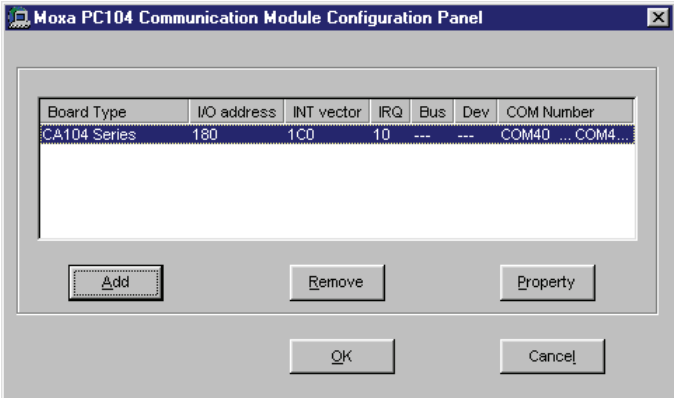
6. The CA Series module will now appear in the configuration panel. Click **OK** to complete installation of the module.



You can open the configuration panel again through **Start → Programs → Moxa Utilities → MOXA PC104 Communication Module Configuration Panel**.

Uninstalling the Module

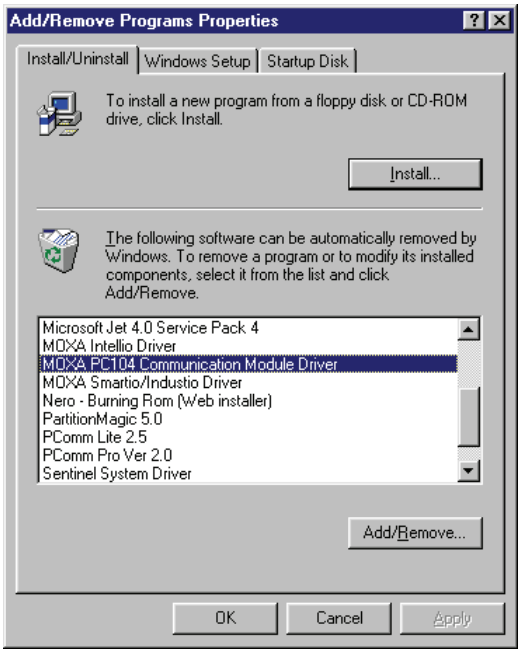
1. Open the configuration panel through **Start → Programs → Moxa Utilities → MOXA PC104 Communication Module Configuration Panel**. Select your CA Series module and click **Remove**.



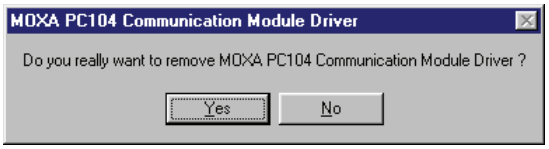
2. A confirmation dialog will appear. Click **Yes** to uninstall the device.

3. To remove the driver from the system, open **Add/Remove Programs** in the **Control Panel**.

4. In the **Install/Uninstall** tab, select **MOXA PC104 Communication Module Driver** and click **Add/Remove**.


Add/Remove Programs Properties
Install/Uninstall
Windows Setup
Startup Disk
To install a new program from a floppy disk or CD-ROM drive, click Install.
Install...
The following software can be automatically removed by Windows. To remove a program or to modify its installed components, select it from the list and click Add/Remove.
Microsoft Jet 4.0 Service Pack 4
MOXA Intellio Driver
MOXA PC104 Communication Module Driver
MOXA Smartio/Industio Driver
Nero - Burning Rom (Web installer)
PartitionMagic 5.0
PComm Lite 2.5
PComm Pro Ver 2.0
Sentinel System Driver
Add/Remove...
OK
Cancel
Apply

5. A confirmation dialog will appear. Click **Yes** to remove the driver.



6. After the driver is removed, click **OK** to close the window.

Linux

1. Execute the following commands from the Linux prompt:

   #mount /dev/cdrom /mnt/cdrom
   #cd /
   #mkdir moxa
   #cd moxa
   #cp /mnt/cdrom/<driver directory>/mxpcdrv.tgz .
   #tar xvfz mxpcdrv.tgz

2. #cd mxpcdrv
   # make clean; make install

3. #cd /moxa/mxpcdrv/driver
   #./mpmknod

4. Install the module driver using the hardware settings that you selected. For example, for an I/O address of 0x180, an INT vector of 0x1C0, and an IRQ of 10, execute the following command:
   #modprobe mxpcdrv ioaddr=0x180 iovect=0x1C0 irq=10

5. You can use the Moxa diagnostic utility to verify the driver's status:
   #cd /moxa/mxpcdrv/utility/diag
   #./msdiag

6. You can use the Moxa terminal utility to test the TTY ports:
   #cd /moxa/mxpcdrv/utility/term
   #./msterm

DOS

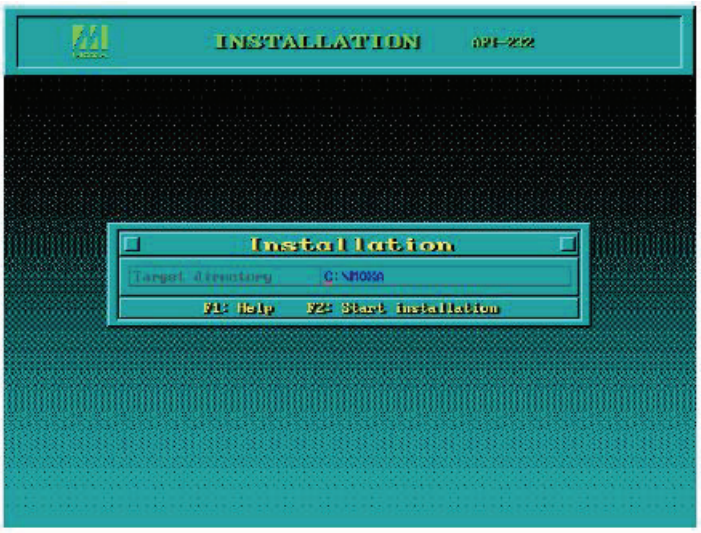
MOXA DOS API-232 is a software package that can help you develop or debug serial communications programs. This section will explain how to install the package, set up the driver, and load or unload the driver. For additional information about the API-232 library and utilities, please refer to Chapter 4.

The DOS drivers support the CA-104 V2, CA-104-T V2, CA-132 V2, CA-132-T V2, CA-132I V2, and CA-132I-T V2. The CA-108, CA-114, and CA-134I models are not supported under DOS.

In the following instructions, the CA-104 is used as an example.

Installing the Driver

Run the installation program, **DOSINST.EXE**, in the DOS folder. Specify the target directory for the API-232 files (e.g., **C:\MOXA**). Press **F2** to start the installation.



After installation is complete, you will be prompted to set up the board and driver initial values. We strongly recommended that you do so.

INSTALLATION
Installation complete, 57 files copied.
After leaving this program, you have to run
C:\MOXA\BIN\SETUP.EXE
program to setup board & driver initial values.
Do you want to run SETUP.EXE now ?(Y/N)

Driver Setup

The following instructions are not intended to illustrate every function of the setup program. For more detailed information, please refer to the help files by pressing F1 in the setup program.

1. Run the setup program, **BIN\SETUP.EXE**.
2. Select your CA Series model and press **Enter**.

3. You must set the Port No., I/O Address, IRQ and INT Vector properly. These settings must match your module's hardware configuration.

4. Press **PgDn** to view advanced port setup options. Your module's configuration will be displayed along with other settings such as port number, buffer size, etc.
5. Verify the settings and make any necessary changes.

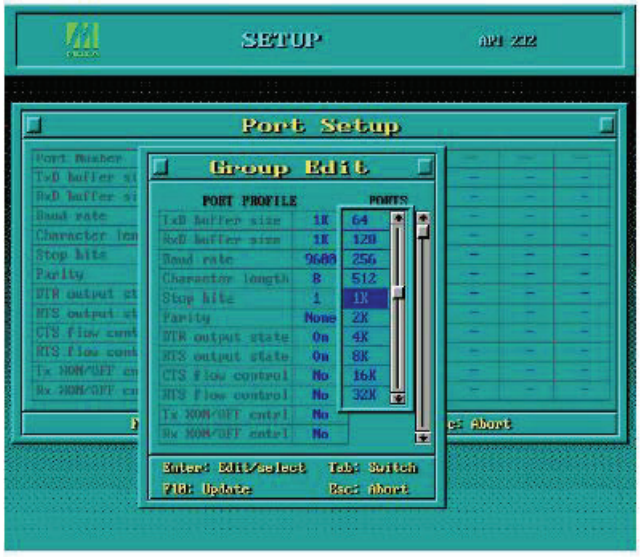
SETUP
API-232
Port Setup
Port Number 01 02 03 04
TxD buffer size 1K 1K 1K 1K
RxD buffer size 1K 1K 1K 1K
Baud rate 9600 9600 9600 9600
Character length 8 8 8 8
Stop bits 1 1 1 1
Parity None None None None
DTR output state On On On On
RTS output state On On On On
CTS flow control No No No No
RTS flow control No No No No
Tx XON/OFF ctrl No No No No
Rx XON/OFF ctrl No No No No
F1: Help F5: Group edit F10: Save Esc: Abort

Port number: This is the port ID of each port. Application software will refer to a port by its port number (ID). Port numbers must be unique; duplicate port numbers are not allowed. The port ID can range from 0 to 127 as long as it does not overlap with another port. Generally, you should consider the convenience of programming when specifying the port number.

TxD buffer size: This is the transmission (output) buffer allocated in the system for each port.

RxD buffer size: This is the receiving (input) buffer allocated in the system for each port.

F5: Group Edit: This allows you to configure several ports simultaneously as a group.



6. Press **F10** to save the latest configuration and exit the setup program.

Loading the Driver

After setting up the driver, you must load the driver in order to gain access to the serial ports on the module. Run **BIN\DPC-DRV.EXE** at the DOS prompt. The driver will detect your CA Series module automatically. You should see messages indicating successful detection of your module, such as the following:

```
PC/104 Communication Module DOS driver Version 1.0
Setup driver …
CA-104 series OK!
Device driver setup O.K.
```

At this point, you can execute applications that support API-232 functions, or start developing applications using the API-232 library.

Unloading the Driver

To unload or release the CA Series driver from memory, enter **DPC-DRV/Q** at the DOS prompt.

4

Serial Programming Tools

MOXA provides Windows serial programming libraries and troubleshooting utilities that are easy to use and powerful. You can use these tools to reduce software development time.

The serial communication library is useful for developing applications for data communications, remote access, data acquisition, and industrial control. It provides a simpler solution compared to the more complex Windows Win32 COMM API.

PComm is a professional serial communication tool for Windows PCs. PComm includes the following features:

- Useful utilities for diagnostics, port monitoring, and terminal emulation
- Sample programs
- Comprehensive help files

The following topics are covered in this chapter:

- **Serial Programming Library**
- **PComm Utilities**
  - Installation
  - PComm Diagnostic
  - PComm Monitor
  - PComm Terminal Emulator

Serial Programming Library

The serial programming library assists you in developing serial communications programs for any COM port that complies with the Microsoft Win32 API. It facilitates the implementation of multi-process and multi-thread serial communication programs and can remarkably reduce development time.

The library provides a complete set of functions as well as various sample programs for Visual C++, Visual Basic, and Delphi. To view detailed descriptions of the available functions and sample programs, go to **Start → Program → PComm Lite** and select **PComm Lib Help**, **PComm Porting Notes**, or **PComm Programming Guide**. You may also refer to the sample programs in the PComm directory.

PComm Utilities

This sections provides brief descriptions of the PComm utilities. For more information about these utilities, please refer to the help files or to the API-232.txt file for DOS.

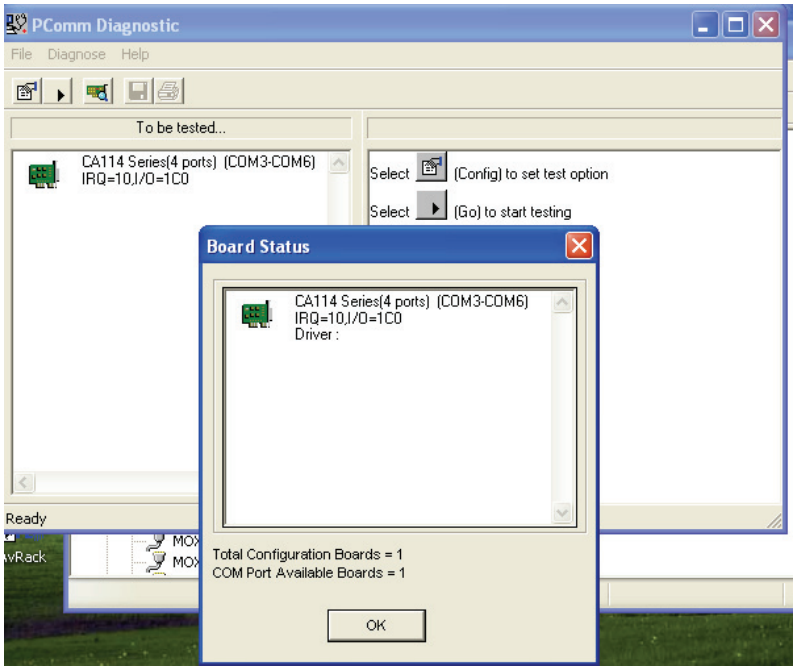
Installation

To install PComm, run **Setup.exe** from the installation diskette. Please note that the PComm diagnostic and monitor utilities are for MOXA boards only. These two utilities will not work with other serial boards.

PComm Diagnostic

PComm Diagnostic is designed for MOXA boards only. It provides internal and external testing of IRQ, TxD/RxD, UART, CTS/RTS, DTR/DSR, DTR/DCD, and other items. You can use PComm Diagnostic to check the operation of both software and hardware.

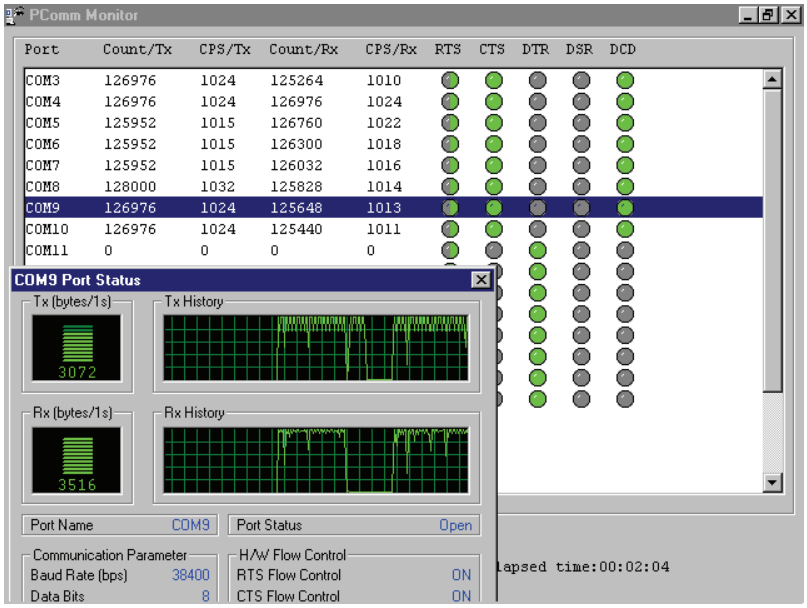
To run the Diagnostic program, go to **Start → Program → PComm Lite → Diagnostic**.



PComm Monitor

PComm Monitor is designed for MOXA board in Windows NT only. It allows you to monitor data transmission of selected MOXA COM ports. It monitors data transmission, throughput, and line status at regular intervals. Click on a specific port to view that port's communication parameters and status.

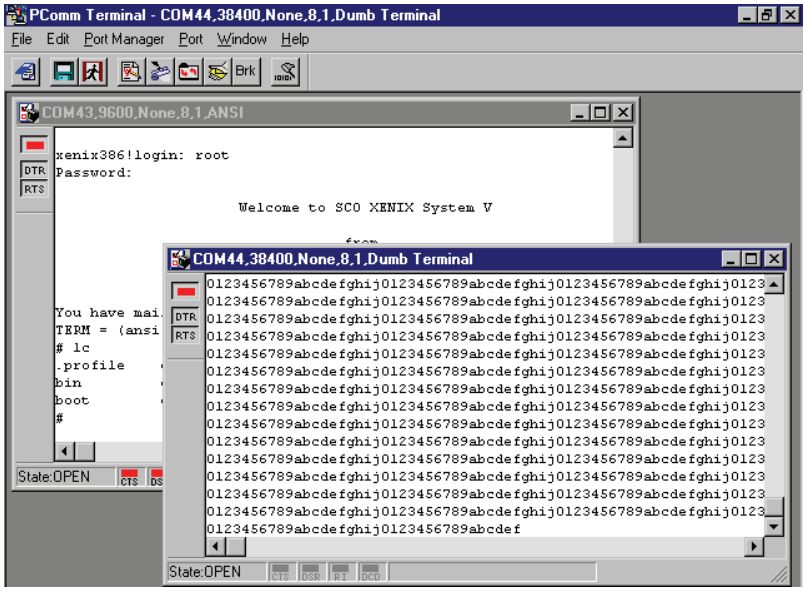
To run PComm Monitor, go to **Start → Program → PComm Lite → Monitor**.



PComm Terminal Emulator

PComm Terminal Emulator can be used to connect to a serial port to verify that data transmission is functioning correctly. It supports multiple windows and both VT100 and ANSI terminal types. You can interactively transfer data, periodically send patterns, and transfer files using ASCII, XMODEM, YMODEM, ZMODEM, and KERMIT protocols.

To run PComm Terminal Emulator, go to **Start → Program → PComm Lite → Terminal Emulator**.



5

Pin Assignments

The box header connector(s) on the module is used to connect to serial devices. Optional cables are available that provide DB9 or DB25 connectors. The pin assignments of the box header connectors and available cables are provided below.

Box Header Pin Assignments

RS-232

These pin assignments apply to the CA-108, CA-114, and CA-104 V2. Note that there are two 40-pin box header connectors on the CA-108, each of which connects to 4 serial ports.

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	DCD0	11	DCD1	21	DCD2	31	DCD3
2	DSR0	12	DSR1	22	DSR2	32	DSR3
3	RxD0	13	RxD1	23	RxD2	33	RxD3
4	RTS0	14	RTS1	24	RTS2	34	RTS3
5	TxD0	15	TxD1	25	TxD2	35	TxD3
6	CTS0	16	CTS1	26	CTS2	36	CTS3
7	DTR0	17	DTR1	27	DTR2	37	DTR3
8	---	18	---	28	---	38	---
9	GND0	19	GND1	29	GND2	39	GND3
10	---	20	---	30	---	40	---

RS-422, 4-wire RS-485

These pin assignments apply to the CA-132 V2, CA-132I V2, CA-114, and CA-134I. Pins 21 to 40 apply to the CA-114 and CA-134I only.

Pin	Signal	Pin	Signal	Pin*	Signal*	Pin*	Signal*
1	TxD0-(A)	11	TxD1-(A)	21	TxD2-(A)	31	TxD3-(A)
3	TxD0+(B)	13	TxD1+(B)	23	TxD2+(B)	33	TxD3+(B)
5	RxD0+(B)	15	RxD1+(B)	25	RxD2+(B)	35	RxD3+(B)
7	RxD0-(A)	17	RxD1-(A)	27	RxD2-(A)	37	RxD3-(A)
9	GND0	19	GND1	29	GND2	39	GND3

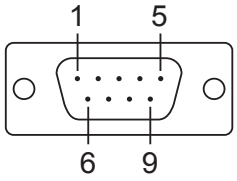
2-wire RS-485

These pin assignments apply to the CA-132 V2, CA-132I V2, CA-114, and CA-134I. Pins 21 to 40 apply to the CA-114 and CA-134I only.

Pin	Signal	Pin	Signal	Pin*	Signal*	Pin*	Signal*
5	Data0+(B)	15	Data1+(B)	25	Data2+(B)	35	Data3+(B)
7	Data0-(A)	17	Data1-(A)	27	Data2-(A)	37	Data3-(A)
9	GND0	19	GND1	29	GND2	39	GND3

Serial Cable Pin Assignments

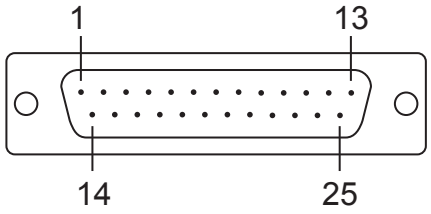
DB9(M) Connectors



The CBL-F40M9x4-50 and CBL-F20M9x4-50 cables provide DB9(M) connectors for each serial port, with pin assignments as follows:

Pin	RS-232	RS-422 4-wire RS-485	2-wire RS-485
1	DCD	TxD-(A)	---
2	RxD	TxD+(B)	---
3	TxD	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	Data-(A)
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		

DB25(M) Connectors



The CBL-F40M25x4-50 and CBL-F20M25x4-50 cables provide DB25(M) connectors for each serial port, with pin assignments as follows:

Pin	RS-232	RS-422 4-wire RS-485	2-wire RS-485
2	TxD	RxD+(B)	Data+(B)
3	RxD	TxD+(B)	---
4	RTS	---	---
5	CTS	---	---
6	DSR	---	---
7	GND	GND	GND
8	DCD	TxD-(A)	---
20	DTR	RxD-(A)	Data-(A)

A

Service Information

This appendix shows you how to contact Moxa for information about this and other products, and how to report problems.

In this appendix, we cover the following topics.

- **MOXA Internet Services**
- **Problem Report Form**
- **Product Return Procedure**

MOXA Internet Services

Customer satisfaction is our number one concern, and to ensure that customers receive the full benefit of our products, Moxa Internet Services has been set up to provide technical support, driver updates, product information, and user's manual updates.

The following services are provided

E-mail for technical support: .....support@moxa.com

Website for product information: .....http://www.moxa.com

Problem Report Form

MOXA CA Series PC/104 Multiport Serial Module

Customer name:	
Company:	
Tel:	**Fax:**
Email:	**Date:**

1. Moxa Product: ☐ CA-108 ☐ CA-114 ☐ CA-134I ☐ CA-104 V2
☐ CA-132 V2 ☐ CA-132I V2

2. Serial Number: _____

Problem Description: Please describe the symptoms of the problem as clearly as possible, including any error messages you see. A clearly written description of the problem will allow us to reproduce the symptoms, and expedite the repair of your product.

Product Return Procedure

For product repair, exchange, or refund, the customer must:

- Provide evidence of original purchase.
- Obtain a Product Return Agreement (PRA) from the sales representative or dealer.
- Fill out the Problem Report Form (PRF). Include as much detail as possible for a shorter product repair time.
- Carefully pack the product in an anti-static package, and send it, pre-paid, to the dealer. The PRA should be visible on the outside of the package, and include a description of the problem, along with the return address and telephone number of a technical contact.